BRITISH CONFERVÆ;

OR

COLORED FIGURES AND DESCRIPTIONS

OF THE

British Plants

REFERRED BY BOTANISTS TO THE GENUS

CONFERVA.

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INTRODUCTION.

SECT. I.

GENERAL REMARKS.

THE Confervæ, whether confidered with regard to their external appearance, their internal ftructure, or the extraordinary manner in which the propagation of many fpecies is effected, may undoubtedly be reckoned among the moft beautiful and curious of the order of vegetables to which they belong. It was my original intention to have given in this work a magnified drawing of each Britifh fpecies, but the number of thofe already difcovered is fo great, and it is fo impoffible to obtain fpecimens of all fufficiently recent for the purpofe, that I find it a tafk almost endlefs, and above my ability to complete. I have therefore been obliged to content myfelf with giving a brief account, by way of fynopfis, of nearly all thofe fpecies which have fallen under my obfervation*, and a drawing, accompanied with a more full defcription, of moft of thofe which I have met with recent, and which have not been figured

* Since this was written, I have been induced fo far to deviate from what I had here propofed, as to give a flight fketch (generally from dried fpecimens) of all the fpecies not figured by other authors, excepting C. fanguinea, which would not revive fufficiently in water to enable me to trace its ftructure.

elſewhere. In this ſtate I offer the reſult of my labors to the Botanic world, in hopes that its numerous defects will be excuſed; when it is conſidered that the Confervæ were very lately involved in ſuch obſcurity as to have been publicly termed 'the opprobrium of Botany.' *

If we look back to what had previouſly been done in this department of ſcience, we ſhall find that Linnæus was too buſily engaged in the immenſe field he had entered on, to ſpare the time neceſſary for an inveſtigation of the ſubmerſed Algæ, as appears both from his writings and Herbarium, in which latter ſcarcely any ſpecimens of Confervæ are preſerved. In the *ſpecies Plantarum*, and alſo in the works of moſt other authors, the ſubject is treated ſo ſlightly, that many different plants may not only be often referred to the ſame deſcription, but were actually deſigned by the writers to be included under it; and even theſe ſhort deſcriptions are chiefly borrowed from Dillenius, who remained almoſt the only original author on the *Confervæ*, till Dr. Roth publiſhed the firſt Faſciculus of his *Catalecta Botanica*, in 1797. Even of Hudſon's deſcriptions in the *Flora Anglica*, many are entirely borrowed from the *Hiſtoria Muſcorum*, and thoſe which he has taken from his own obſervations are too ſhort to be of much ſervice. Lightfoot, indeed, when he relied upon himſelf alone, is perhaps more than any other author exempt from ſuch a charge, and the only thing to be lamented in this excellent Botaniſt is, that he allowed himſelf ſo often to tranſcribe the works of others, who were far inferior to himſelf in the art either of obſerving or of recording their obſervations. Had Dillenius accuſtomed himſelf to the uſe of a microſcope, there is little that might not have been expected from his accurate pencil; but, for the want of this aſſiſtance, he has frequently confounded ſeveral ſpecies together, which agree only in external habit, and has even deſcribed ſome as jointleſs in which diſſepiments are readily obſervable with a common glaſs. The only magnified drawings of Confervæ, to which reference with any tolerable preciſion could be made prior to the cloſe of the laſt century, were thoſe of Mr. Ellis, in the 56th volume of

* Dr. Smith's Introductory Diſcourſe, *Lin. Trans.* I. p. 34.

the Royal Society's Tranſactions; and thoſe of Muller, in the *Flora Danica*, and *Nova Acta Petropolitana;* in which works theſe diſtinguiſhed naturaliſts have diſplayed their accuſtomed accuracy and talent for minute investigation. Such being the caſe, I truſt that this work, by elucidating the ſynonymy of theſe, as well as of the more modern authors, and by the variety of new matter it contains, will be found ſo far to clear the way as to induce others, with more leiſure and ability than myſelf, to purſue the ſtudy, and perfect our knowledge of a tribe than which none will be found more intereſting. The purſuit, though not otherwiſe of high importance, tends, as Dr. Smith obſerves, 'to enliven the ſcenes of rural retirement, to relieve the mind amid the buſy purſuits of active life,' and carries with it its own reward in the conſtant ſource of amuſement which it preſents to the ſtudent wherever he goes, and in the complacency which an inveſtigation of the works of nature never fail to excite in the mind, beſides the higher object of teaching man to admire and adore his Maker in the works of his hand.

M. Girod Chantrôns, in his *Recherches ſur les Conferves*, has, both by chemical analyſis, and by obſervations on their ſtructure, endeavoured to prove that the *Confervæ* are either real animals or of animal origin; and that many of them are actual Polypi, others the habitations of theſe animals, and others again, aggregations of Polypi, ſo attached together as to form a tube. It appears to me, ſo far as I am able to judge from the drawings and deſcriptions, that this work is too inaccurate to merit much attention. Dr. Treviranus, in his *Biologie**, has gone ſtill further, and propoſes to unite, not only the Confervæ, but the whole claſs Cryptogamia with the Zoophytes, and thus form a fourth kingdom, intermediate between the animal and vegetable. I cannot help ſuſpecting that theſe authors have given too much ſcope to their imagination, and the more ſo, as a ſimilar analyſis by M. Vauquelin, has been attended with ſuch different reſults, as to confirm him in the oppoſite and generally

* This work, which I have not myſelf ſeen, is wholly quoted on the authority of Sprengel's *Introduction to Botany*.

received opinion. He found that the ſmall quantity of ammonia contained in *Conferva* is combined with pyromucous acid, which is the caſe in many vegetables: that they do not give out muriate of ſoda, as Meſſrs. Chantrons and Lacroix have affirmed, but muriate and carbonate of potaſh, and if they had contained ſoda, this is only what occurs in ſeveral other plants. He conſiders the quantity of aſhes they afford as a ſtill further proof, and upon the whole entertains no doubt that their ſubſtance is truly vegetable.* M. Decandolle has alſo, in my opinion, ſucceſsfully controvered M. Chantrons' theory; and I therefore need only add, that I have never diſcovered an appearance in any of the Algæ which occaſioned the leaſt ſuſpicion in my mind that they are not true and perfect vegetables.

With regard to the preſent arrangement of the *ſubmerſed Algæ*, I have little more to add than that nothing can more fully evince our ignorance reſpecting them, or ſhew how imperfectly they have been hitherto ſtudied, than the circumſtance of ſo many diſcordant ſpecies being placed together, as thoſe of which the preſent genera are compoſed. It may probably be expected, that in a work of this kind I ſhould attempt ſome better arrangement, but, though ſatisfied of the neceſſity of ſuch a taſk, I can only lament my inadequacy to the execution of it: the time is not yet arrived; ſufficient materials are not yet collected; and it ſhould be deferred not only till the *Confervæ*, but alſo till the *Fuci*, *Ulvæ*, and *Tremellæ* are better known, as well with regard to their fructification as to the number of their ſpecies; for many are ſtill frequently diſcovered, differing eſſentially in their modes of propagation from thoſe before known. Crude and undigeſted attempts at reformation ſerve in Botany, as in other matters, to perplex rather than to enlighten, and I will therefore add nothing further on this ſubject, than that I fully agree with my friend Mr. Turner, that, previouſly to any permanent ſyſtem being eſtabliſhed, it will be neceſſary to reduce the preſent genera into one maſs, and proceed in nearly the ſame manner as if nothing had been done before.

* Journal de Phyſique, liv. p. 427.

The *Confervæ* have hitherto been considered as principally distinguished from other *Algæ* by the jointed structure of the filaments; but this circumstance is not of itself sufficient to separate them from many of the *Fuci*, nor even perhaps from some of the *Lichens* and *Fungi*.* There are also several plants which have by the general consent of Botanists been always called *Confervæ*, in which no joints are observable, so that, if, in addition to what is here observed, be added the many remarks upon the same subject that occur in the present work, and in Mr. Turner's admirable *History of the Fuci*, (particularly in his description of *F. dasyphyllus*) it appears sufficiently proved that the jointed structure can no longer be used as a distinctive generic mark. Indeed the Confervæ must be regarded rather as a natural family, comprehending many genera of plants than as a single genus, and I have therefore felt it would be absurd, as well as unnecessary, to attempt such a generic character as would comprise the whole, because, according to the rules of botanical philosophy, this should be formed from the fructification, and the fructification of the *Confervæ* differs so infinitely in different species, that it would be impossible to include them all under any such description. I have, however, for the present, retained *Conferva* as a general name for all those plants which have been, or which if known, would have been so called by preceding authors, in the same manner as the term Lichen was applied by Dr. Acharius, in the Prodromus of his *Lichenographia Suecica*. To these I have also added the *Byssi filamentosæ*, as they differ in no respect from the *Confervæ* in structure; and since the publication of my description of *C. aurea*, the propriety of this union has been established by a discovery of its capsules, which resemble those of Dr. Roth's *Ceramia*.

Drs. Ingenhouz and Girtanner, from the general prevalence of *Confervæ* in almost all waters and moist places, have been led to suppose that they are generated spontaneously from the decomposition of water by the solar rays; but

* Since I published the description of *C. atro-virens*, Mr. Hooker has ascertained that it is *Cornicularia pubescens* of Acharius, but the capsules which I discovered in July, 1806, near Beddgellart, prove that it belongs to the *Confervæ*. *Fibrillaria ramosissima* of Sowerby's English Fungi, as well as some other species of the same genus, and of the *Auricularia*, are links which connect the latter tribe with the Confervæ.

"omnia ex ovo" is now ſo univerſally received as an axiom, that few naturaliſts will be likely to accede to their opinion. In ſome *Confervæ*, indeed, no mode of propagation has hitherto been diſcovered, except by an elongation or expanſion, and viviparous diviſion of the filament; but analogy induces me to ſuſpect that even theſe are alſo propagated by ſeeds, as has been aſcertained to be the caſe in moſt of the other ſpecies.

Of the extent of this tribe I feel myſelf unable to offer a conjecture: more than two hundred different ſpecies have been already aſcertained in the few parts of Europe in which the *Confervæ* have been at all examined, and I have no doubt but that even our own Iſlands will be found to produce a ſtill larger number. In my *Synopſis* I have been obliged to omit ſeveral ſpecies, with ſpecimens of which I have been favored by my friends, becauſe the latter are ſo imperfect, or have ſuffered ſo much change from drying, that it is impoſſible to obtain their diſtinguiſhing characters. In addition to the ſpecies which have fallen under my own obſervation, or of which ſuch drawings or deſcriptions have been publiſhed as to leave no doubt of their identity, I have admitted only thoſe of which I poſſeſs either ſketches or ſpecimens, ſufficiently perfect to afford a tolerably correct idea of the recent plant. The accuracy, however, of all deſcriptions of *Confervæ*, which are taken from dried ſpecimens, for reaſons aſſigned in the preface to my firſt Faſciculus, may be doubted, and I therefore, whenever this has been the caſe, have prefixed an aſteriſk to the name of the ſpecies, in order that a proper allowance may be made.

The *Confervæ*, by the large quantity of oxygen that they give out, have been thought to render the air about ſtagnant waters more wholeſome; but of their uſe and economy no more is yet known than of their number. Many ſpecies remain of whoſe whole phyſiology we are intirely ignorant, and perhaps no other tribe can be found which ſtill offers ſo wide a field for diſcovery.

Of thoſe who have attempted a diviſion of the Confervæ into Genera, Dr. Roth and M. Vaucher are the authors who deſerve particular attention, and I ſhall now proceed to give a ſketch of their different arrangements.

SECTION II.

SYSTEM OF ROTH.

Dr. Roth has divided the ſubmerſed Algæ into the following Genera: *Fucus*, *Ceramium*, *Batrachoſpermum*, *Conferva*, *Mertenſia*, *Hydrodictyon*, *Ulva*, *Rivularia*, *Linkia*, and *Tremella*. I ſhall give the outline of each of theſe, and offer a few remarks on thoſe that contain any of the plants uſually denominated Confervæ.

Fucus.—*Veſiculæ aggregatæ, ſubſtantiæ frondis immerſæ, poris mucifluis præditæ.*

This genus, of which the definition is as vague and unmeaning as the ſame number of words can well be, is intended to comprehend a part only of the plants uſually called by the name of *Fuci*, the remainder having been referred to the following.

Ceramium.—*Filo membranaceo-cartilaginea, capſulis granuliferis ipſis adnatis.*

In this genus are made two diviſions; the firſt, '*filis conformibus*,' contains ſome of the more ſlender Fuci, and of the unjointed capſuliferous Confervæ: the other, '*filis ſpurie geniculatis*,' comprehends the jointed Fuci, and the remainder of the capſuliferous Confervæ. There is undoubtedly a great ſimilarity in the fructification of the capſuliferous ſpecies, and yet ſeveral natural tribes, if not really diſtinct families, may be perceived among them, although, as has been already obſerved, the imperfect ſtate of our knowledge, would render it imprudent to attempt at preſent to define their reſpective limits. I ſhall however enumerate thoſe which appear moſt ſtriking.

The unjointed ſpecies probably all belong to the genus *Vaucheria*, as will be hereafter mentioned.

C. elongata, as is obſerved in the deſcription of that ſpecies, has two kinds of

capſules, ſimilar to thoſe of *Fucus ſubfuſcus* and *F. pinaſtroides*, from which it cannot be ſeparated without violence; and to theſe may probably be united the black marine, and thoſe other ſpecies in which the filament is an aggregation of ſeveral ſmaller tubes; in theſe the capſules are ovate, reticulated, and ſeſſile.

In *C. ciliata*, *diaphana*, *rubra*, and ſome others obviouſly ſimilar in character, the capſules are ovate, ſolitary, and ſubtended by two or more calyciform proceſſes.

In *C. plumula*, *rosea*, *Turneri*, and their congeners with pinnated filaments, the capſules are globoſe, numerous, and neither reticulated nor ſubtended by the abovementioned proceſſes. The capſules of *C. littoralis*, *pennata*, *ſcoparia* and *tomentoſa*, are nearly ſimilar to the foregoing, but, inſtead of being placed on the ramuli only, at the end of almoſt every joint, they are ſcattered without order on the filaments.

The capſules of *C. ſpongioſa*, and alſo moſt probably of *C. verticillata*, are oblong, petiolated, and unuſually ſmall for the ſize of the plant.

C. ſetacea, *barbata*, and thoſe which have their ſeeds imbedded in mucus, and guarded by an involucrum inſtead of a capſule, form a very diſtinct and beautiful family, which cannot be arranged with propriety in any of Dr. Roth's genera. From the deſcription in Mr. Turner's work, it appears that *F. plumoſus*, as well as ſome other Fuci, may probably be found to belong to the ſame genus, which I had hoped to have ſeen at ſome future time, when the ſubmerſed algæ ſhall be remodelled, diſtinguiſhed with the name of Mr. Borrer, to whoſe unwearied application we are indebted for our knowledge of many of its ſpecies, but I have juſt found that Dr. Acharius has, in his new *Lichenographia Univerſalis*, ſo called one of the new genera of his favorite family.

BATRACHOSPERMUM.—*Baccae polyſpermæ, coloratæ, filamenta geniculata, cartilagineo-membranacea.*

In this genus two ſpecies only are enumerated, with one of which, *B. dichotomum*, I am entirely unacquainted. The other is *C. gelatinoſa*, of which a deſcription may be found in the body of this work.

CONFERVA.—*Tubuli vel filamenta herbacea internis parietibus fructificationum granulis adſperſa.*

This genus, ſtill more than Ceramium, compriſes plants belonging to ſeveral natural families, perfectly diſtinct from each other, and the learned Doctor ſeems to have uſed it as a receptacle for all thoſe ſpecies of which the fructification is unknown, or which he could not otherwiſe diſpoſe of. They are arranged under two ſeparate heads, "*Tubuloſæ*," and "*Filamentoſæ*." Of theſe, the former is compoſed of the tubular *Ulvæ*, the union of which with the *Conferva*e appears to me to be by no means warranted by what is at preſent known on the ſubject. The latter has three main diviſions, depending on what are here termed *genicula*, but which are in the courſe of this work (perhaps improperly) named *Diſſepiments*. I have uſed this word to expreſs every ſort of diviſion between the *veſicles* or *articuli* of theſe plants. It would certainly be deſirable to diſtinguiſh, by different names, the different natures of theſe diviſions, but they are often ſo ambiguous, and in plants ſo minute it is neceſſarily ſo difficult to examine them accurately, that I have not ventured to undertake the taſk.

The only Britiſh ſpecies arranged in the firſt diviſion, "*Conformes ſeu continuæ*," are *C. feneſtralis*, *Ulva plumoſa*, and *C. dilatata*, reſpecting which I muſt be allowed to remark, that this arrangement of *C. feneſtralis* is erroneous, as diſſepiments may be obſerved in the filaments when examined with the higher powers of a microſcope, while *U. plumoſa* is at leaſt a plant of doubtful place in the ſyſtem, and *C. dilatata* is the ſame with my *C. veſicata*, and ſhould therefore in this arrangement have been placed with *C. amphibia*, among the *Ceramia*.

The ſecond diviſion is entitled "*Articulatæ, geniculis ſpuriis.*" Dr. Roth calls thoſe diſſepiments *ſpurious*, which have their origin in the internal ſtructure, and not in the fibres which conſtitute the filament. This ſection is itſelf thrice ſubdivided.

The firſt ſubdiviſion is termed "*Sporangiorum annulis.*" In theſe plants, Dr.

Roth ſuppoſes that the joints are in fact a ſeries of annular ſeed-caſes, not attached to, but diſpoſed within the filaments, at regular ſhort intervals from each other; and that theſe intervals conſtitute the ſuppoſed diſſepiments. This ſubdiviſion compriſes Vaucher's natural genus *Oſcillatoria*, and is the ſame with the ſection B. a. of my ſynopſis, but I have not uſed the word *ſporangium*, becauſe it cannot be properly applied to theſe joints, as will be hereafter ſhewn.

Of the ſecond ſubdiviſion, which is entitled, "*Utriculis matricalibus*," Dr. Roth ſays, that this ſpecies of ſpurious partition differs from thoſe formed by the *annular ſeed-caſes* above deſcribed, in this particular, that they are not viſible in the earlieſt, but only at ſome advanced ſtage of their growth, or in conſequence of ſome violent concuſſion, and that the joints can never vary from the poſition allotted to them. Whilſt the plants are young, or till their organization has been diſturbed, the internal veſicles are contiguous to each other at their extremities, and the filaments then appear in every reſpect equal and continuous; but, when at length theſe veſicles become contracted, an empty pellucid ſpace is left at each extremity, without any appearance of a true diſſepiment in the middle. The kind of joint here deſcribed is found, according to Dr. Roth, in many of the *Ceramia*, as well as in *C. ægagrophila*, *ericetorum*, and other Confervæ without any natural affinity; and it appears to me evident that the term *utriculus matricalis* cannot with propriety be uſed to define a ſpecies of joint which occurs ſo frequently in capſuliferous ſpecies.

The plants of the third ſection, "*Stricturis*," are deſtitute of real joints, but divided by annular ſtrictures at uncertain diſtances from each other. *C. toruloſa* is the only Britiſh ſpecies here arranged, unleſs my ſuſpicion ſhould prove well founded, that Dr. Roth's *C. reptans* is *Fucus opuntia*.

We next come to the third main diviſion of the filamentous Confervæ, "*Articulatæ geniculis veris*." Such alone are admitted by Dr. Roth to be true diſſepiments as actually interſect the interior of the tube, being formed by the branching of the parallel fibres, of which, together with a cellular membrane, the filament itſelf is compoſed. This ſection has four ſubdiviſions, of which the firſt is the

"*Fasciatæ.*" In these Dr. Roth is of opinion that the dissepiment does not extend wholly across the tube, but leaves it pervious for its whole length. This subdivision comprises the genus *Conjugata* of Vaucher, with *Conferva equisetifolia*, *crispata*, *ebenea*, *vivipara*, *fucicola*, and many others, and it is therefore obviously far from natural.

Of the "*Torulosæ*," which form the second subdivision, the dissepiments rise above the surface of the tube in the form of annular excrescences. Dr. Roth here supposes the dissepiments to be interwoven with a large portion of the cellular membrane, which makes them less able to resist the elasticity of the enclosed air, and they thereby become distended. *C. fluviatilis* is the only British species that occurs in this subdivision, but my observations have tended to confirm the opinion of the late lamented Dr. Mohr, that these protuberances are of a different nature, and ought not to be regarded as dissepiments.

C. atra is arranged by itself, and forms a third subdivision with the name of "*Insititiæ*," the meaning affixed by the Doctor to which term is, that the longitudinal fibres of the filaments on attaining to the length prescribed for each joint, suddenly unite in a single point, and are bent inwards towards the cavity of the tube, thus forming an appearance similar to that of the *tortulosæ*, though in reality of different structure; and hence each joint is narrow at its origin, and gradually incrassated upwards.

The fourth and last subdivision is composed of the "*Verticillatæ*," distinguished chiefly by their verticillated, or rather imbricated, ramuli. In this *C. vertillata*, and *spongiosa* are arranged, together with some foreign species probably of the same family, and with *C. villosa*, a plant widely different both in its nature and structure.

Having taken this cursory view of the genus *Confervæ*, as established by Dr. Roth, it remains only to add, that enough has already been discovered of the fructification of many of the species classed under it, to shew the necessity of their removal to other genera, and it seems to me that those only should be retained which are propagated by seeds formed within the joints, without the

assistance of any external process whatsoever, thus excluding even the *Conjugatæ*, which it was his intention to admit.

MERTENSIA.—*Tubuli sub coriacei, intus articulati, sporulæ in tunica, papillas vesicules clavatas fasciculatas efficiente, sparsæ.*

This genus has but one species, the *Ulva lumbricalis* of Linnæus, a native of the Cape of Good Hope, with which I am totally unacquainted. According to Dr. Roth's account, the structure of this plant is extremely curious. The filaments are lined on the inside with a fine cellular membrane, and at short, but equal and regular, distances a circle of spine-like processes issue internally, over which the cellular membrane is spread, so as to close up the tube transversely at every dissepiment.

HYDRODICTYON.—*Fila sub membranacea, tubulosa, ad angulos varios in utriculum retiformem finibus suis combinata, demum utriculum matri similem invaginatum producentia.*

C. reticulata differs so entirely from every other known Confervæ, that Dr. Roth has very properly formed it into a separate genus, with the present expressive name. The essential character in the second Fasciculus of his Catalecta is taken wholly from the singular contexture of its filaments, but this he has been enabled to amend in the third, by M. Vaucher's important discovery of its still more singular propagation.

ULVA.—*Membrana expansa, diaphana, fructificationum granulis præprimis circa marginem innatis.*

The genus, as here constituted, is intended to comprehend only those species which are composed of a single leaf-like membrane, the tubular ones having, as before mentioned, been removed to the *Confervæ*, and *U. incrassata*, *U. rubens*, and their affinities, to the following family.

RIVULARIA.—*Substantia gelatinoso-cartilaginea, hyalina, integumento membranaceo destituta; fructificationes in filis geniculatis intra substantiam nidulantibus.*

The plants which Dr. Roth has referred to this genus, are so closely allied

with the *Batrachosperma*, and the latter approach some other families of the *Confervæ* by so many points, as to render the attempt to separate them extremely difficult. The gelatinous nature and appearance of the filaments is not sufficient, nor are the fine transparent processes into which their ramuli are drawn, for these may be also observed in *C. protensa*, *vivipara*, and some other *Confervæ*. Although this affinity is so strong, yet as none of the *Rivulariæ* have ever been published under the latter name, I have not thought it necessary to notice them in my general synopsis.* Dr. Smith, misled by some apparent resemblance in their structure, has published some of the *Fuci*, and even *Tremellæ*, under this name, but I trust it will not be found necessary to retain them, or the *Rivulariæ* can no longer be regarded as a natural family.

LINCKIA.—*Substantia gelatinosa, hyalina, integumento membranaceo hyalino induta, farcta fructificationum granulis in lineas curvatas moniliformes ordinatis.*

Micheli used *Linckia* as a generic name for those *Tremellæ* with which he was acquainted, and in these he observed that the granules were arranged in regular lines. Dr. Roth, however, carrying his researches farther, discovered that in some only of the *Tremellæ* the seeds are thus arranged, but that in others they are scattered throughout the internal mucus without apparent order. He has therefore separated the former from *Tremella*, and with them constituted the present genus, retaining Micheli's original name. Five species have been ascertained, consisting of *Tremella nostoc* and *utriculata*; two recently discovered species, and *Ulva pruniformis*, which had been before removed to the *Tremellæ* by Mr. Woodward. The plant which Dr. Roth supposes to be *U. pruniformis* of Linnæus, is however essentially different from that figured in *English Botany* (t. 968,) with the same name, and which Mr. Hooker informs me is *Rivularia angulosa* of the *Catalecta Botanica*. *Linckia pruniformis* is not known to be a British species.

* I have never seen a recent specimen, but I presume from the description, that *C. echinulata* of Eng. Bot. t. 1378, belongs to this family.

TREMELLA. — *Substantia uniformis gelatinosa, hyalina, integumento membranaceo induta, fructificationum granulis in membranæ contextu fibroso absque ordine sparsis.*

Such of the plants as have been usually called *Tremellæ*, and have the seeds scattered without order throughout the internal mucus, constitute, as is above observed, this genus.

BYSSUS.—In the third volume of the *Flora Germanica*, this genus is retained with the following definition, "*Filamenta vel fibrae tenuia, membranacea, lanuginosa, extus fructificatione granulis adspersa,*" and comprises all the species of Hudson's section, "*filamentosæ*," but in the second volume of the *Catalecta Botanica*, some of them had been referred to the *Fungi*, and the "*Pulverulentæ*" had been several years before removed to the *Lichens* in the first volume of the *Flora*. In the third Fasciculus of the *Catalecta*, the genus *Byssus* is not noticed, but three of the filamentous species are incorporated with the *Confervæ*. I have examined *B. phosphorea, æruginosa, velutina, purpurea, nigra, aurea*, and *sulphurea*.* and cannot find that they possess any character to distinguish them from the *Confervæ*, but *B. septica* seems to be of a different nature, and to belong to the Fungi, with which it has been arranged by M. Persoon.

It seemed necessary to state my reasons for not having followed the arrangement of so eminent a Botanist as Dr. Roth, and I have consequently been obliged to point out what have appeared to me to be its leading imperfections. Every word written by such an observer must, however, be of value, and although his arrangement has, in my opinion, been premature, I am convinced that a better will never be effected without a liberal use of his numerous observations.

* *Byssus sulphurea, Lichenis facie, tenuissima ac densissimè, filtrum & pannum laneum texture similans.* MICHELI, p. 211 a 17. DILL. *Hist. Musc.* p. 7. t. 1. f. 13. This singular species has not been discovered in Britain, and I am indebted to Mr. Dryander for a specimen from the Banksian Herbarium.

SECTION III.

SYSTEM OF VAUCHER.

M. VAUCHER has divided the Confervæ into the ſix following genera. *Ectoſperma*, *Conjugata*, *Hydrodictyum*, *Polyſpermum*, *Batrachoſpermum*, and *Prolifera*. In purſuance of my plan, I ſhall now give an outline of his ideas of the general fructification of each of theſe, with which I ſhall incorporate the few obſervations I have myſelf made on the fruit of their reſpective ſpecies.

The ECTOSPERMES are thus defined, "*Les organs fécondans ſont exterieurs, et les grains ſont portées ſur des pedoncles qui partent d'une tube ramifié.*"

The generic name *Ectoſperma*, has been changed by M. Decandolle to *Vaucheria*, and the genus is with this alteration adopted in *Engliſh Botany* with the following eſſential character, "*Antheræ, awl-ſhaped, incurved. Capſules adjoining to the Antheræ, ovate, ſingle ſeeded, in pairs or ſolitary.*"

M. Vaucher has traced the growth of theſe plants, through all their ſtages, and ſatisfactorily proved what the obſervations of Mr. Borrer have ſince fully confirmed, that they are propagated by the germination of their granules. Although, in his ſpecific deſcriptions, M. Vaucher has called theſe granules naked ſeeds, yet his remarks, added to my own, induce me rather to believe that the *grains* of all the *Vaucheriæ* are monoſpermous capſules, as Dr. Smith has deſcribed them. I wiſh, however, rather to ſubmit this as a matter for future obſervation, than to expreſs a decided opinion upon the ſubject, though having circulated a theory founded on a contrary opinion among my Botanical friends, I think it neceſſary to ſhew how I was led into this error. The ſpecies figured at T. 74, under Muller's name of *C. veſicata*, is *Vaucheria ſeſſilis*, but I could not then diſcover any antheræ, and as Vaucher's *grains* are repreſented to be naked ſeeds, and as he had not mentioned the capſules or bladder-like veſicles which abounded in my ſpecimens, I concluded that it muſt be a different ſpecies.

I afterwards diſcovered the grains and antheræ of *V. geminata* on ſome filaments, preciſely reſembling thoſe of *Conferva veſicata*, but the grains were ſo much ſmaller, that, relying on M. Vaucher's deſcription, I concluded they were naked ſeeds. I therefore imagined that in the former ſpecimen the male and female organs were concealed within the capſule, and in the ſpecimens which I afterwards gathered, that the capſules had fallen off or died away, and thus left the ſeeds ſitting on their receptacle with the anthera expoſed to view.

M. Vaucher has not been able to prove the nature of what he has called *anthera* with equal ſatisfaction to himſelf; "Cependant je ne ſuis pas auſſi certain des fonctions auquelles eſt appellée la corne qui les accompagne; elle eſt à la verité conſtamment placée dans les voiſinage des grains; on la voit bien repandre ſa pouſſiere dans *l'Ectoſperme ovoide* en particulier, cela eſt inconteſtible. Cependant j'ai toujours déſiré quelque experience directe, qui me put convaincre de l'uſage de cette corne." It appears from this quotation that M. Vaucher has been rather too haſty in his application of the term *anthera* in the ſpecific deſcriptions, and that he has fallen into the common error of ſuppoſing that the analogy between phænogamous and aquatic cryptogamous plants muſt be perfect, without making a proper allowance for the difference that muſt neceſſarily exiſt in the latter from the difference of their ſituation. If his conjecture ſhould be confirmed by future obſervation, I am of opinion that the awl-ſhaped proceſſes ſubtended by the capſules of ſeveral *Ceramia*, and the tribe intended to have been called *Borreria*, will alſo prove to be male organs, and effect the fecundation of the ſeed in the ſame manner.

Of this genus, M. Vaucher has enumerated eleven ſpecies, few of which can be at all diſtinguiſhed from each other except by the fructification, and this varies ſo much with reſpect to the ſize, number, and diſpoſition of the capſules in almoſt every different maſs, and even in the ſame ſpecimen, that it can hardly be conſidered a ſufficient indication of ſpecific difference. My friend, Mr. Hooker, ſays he has ſeen petioles bearing two and ſome three capſules, and other capſules ſingle and ſeſſile on the ſame plant. In my deſcription of *C.*

veſicata, (*V. ſeſſilis*) I have remarked its cloſe affinity with *C. amphibia*, and in the third Faſciculus of the *Catalecta Botanica*, Dr. Roth has arranged all the *Vaucheriæ* as mere varieties of this ſpecies. My obſervations have made me incline to this opinion with reſpect to a majority of the ſpecies, and I much doubt whether they may not be all referred to either *C. amphibia*, *dichotoma*, or *Dillwynii*. As *C. myochrous* and *C. comoides*, in their ſtructure, approach theſe ſpecies, it is poſſible that their fructification, when diſcovered, will prove ſimilar. Should this conjecture be well founded, the unjointed ſpecies form a family, ſufficiently diſtinct from the other Confervæ; and whenever the algæ are new modelled, will, I truſt, be continued with the generic name by which M. Decandolle has ſo properly diſtinguiſhed the *Ectoſpermes*.

M. Vaucher has made but few references to the works of preceding authors, and, to prevent confuſion, it muſt be remarked that theſe few are extremely inaccurate: thus all the *Ectoſpermes* are ſaid to have been compriſed by Linnæus under the name of *C. fontinalis*, with which plant none of them have the leaſt affinity. Muller's *C. veſicata* is referred to *Prolifera veſicata*, which is a widely different ſpecies, and the reference to *C. velutina* with the ſynonyma of Micheli and Dillenius is equally erroneous.

CONJUGATA.—*Les grains ſont interieurs et renfermées une à une dans des tubes cloiſonnées et toujours ſimples.*

This natural and wonderful family is better characterized by the name, than by this generic deſcription, under which many other plants might be arranged whoſe filaments have never been obſerved to conjugate.

Muller, although he publiſhed excellent drawings both of *C. nitida* and *jugalis*, entertained no idea that the difference between them merely ariſes from the fructification. Meſſrs. Charles and Romain Coquebert, who alſo diſcovered *nitida* in its conjugated ſtate, were equally ignorant of this circumſtance, though they advanced one ſtep further, and aſcertained that the globules formed by the union are true ſeeds which reproduce the ſpecies. M. Vaucher's intereſting memoir, publiſhed by the Philomatic Society of Paris, although full of im-

portant diſcoveries on other Confervæ, merely confirms the foregoing obſervations, and contains but little new on the *Conjugatæ*.

In the ſpring of 1802 I diſcovered, that at a certain period of their growth, ſmall tubes are protruded from the ſimple filaments of *C. nitida*; that theſe unite with the ſimilar tubes of other contiguous filaments; that the grains of the one being emptied into, coaleſce with the grains of the other filament, and thus conſtitute the *C. jugalis* of the *Flora Danica*.* I alſo found that this ſtrange property is not confined to this ſingle ſpecies, but that the *C. genuflexa* of Roth is formed in like manner by an union among the ſimple filaments of Muller's *C. ſerpentina*, and I traced thoſe of *C. ſpiralis* from a ſimple to a conjugated ſtate. In the ſummer of the ſame year, Mr. Woods found *C. bipunctata* with the filaments conjugated, and the ſuppoſed originality of theſe diſcoveries afforded me great pleaſure, being then quite ignorant of M. Vaucher's continued application to this tribe. At length the appearance of his *Hiſtoire des Conferves d'eau douce*, at Geneva, in 1803, ſhewed that we had arrived at a knowledge of the *Conjugatæ*, and formed nearly the ſame concluſions reſpecting them, almoſt at the ſame time, and quite independently of each other.

I have ſince diſcovered the ſeeds of *C. genuflexa*; they are large and globular, and not formed within either filament, as in *C. jugalis*, but in the connecting tube, which thereby becomes greatly diſtended, as is repreſented in my ſupplementary plate. M. Vaucher could not diſcover the ſeeds of this ſpecies, and of the nature of his obſervations recorded in the following paſſage, I cannot form any conjecture. "Depuis le moment ou j'écrivais cette déſcription, j'ai vu germer cette conjugée; elle nait d'une manière fort differente de toutes les autres: la matière ne paſſe pas d'un tube a un tube voiſin, mais chaque loge fournit elle même une jeune plante; le tube exterieur qui ſe trouve renfermè,

* When I firſt made the drawings and deſcriptions of *C. nitida* and *jugalis*, I had not the leaſt idea that they belonged to the ſame ſpecies, and it was unfortunately not till juſt after my firſt Faſciculus had been given to the printer, that I was fully ſatisfied on this ſubject. My deſcription of *C. ſpiralis*, and the drawing B which was afterwards added, will, however, ſufficiently prove that I had even then arrived at a knowledge of this curious property.

devient une jeune Conjuguée, qui étoit toute entiere contenue dans le vieux tube, comme elle même contient les plantes qui doivent se dévellopper ensuite: elle en sort par l'extremité lorsqu'elle occupe la dernière loge, ou par les cotés lorsqu'elle se trouve dans une des loges du milieu." I have sometimes seen the simple filaments of *C. genuflexa* rolled round in a serpentine form, as Muller has represented, and these have been erroneously referred by M. Vaucher to a separate species.

Each joint of the *Conjugatæ* puts forth only one connecting tube, which is sometimes on one side of the filament and sometimes on the other; so that each filament is often connected with two others. A short time after the union has been effected, the granules from one joint, gradually pass into that with which it is joined, till the former at length becomes empty and colorless. The granules of both then coalesce in the other joint, or in the connecting tube, and form a globular or oblong mass, which M. Vaucher has proved to be the true seed, and has seen it germinate and reproduce the species. No seeds appear to be ever formed but by this union of the joints of two different filaments with each other, and of these united joints only one ever produces a seed. It is therefore natural to conclude, although the contents of the joints by their appearance cannot in the least be distinguished from each other, and although in things so minute and obscure it is necessary to speak with the utmost diffidence, that one contains male and the other female powers, and that their union is essential to the propagation of the *Conjugatæ*. It might indeed reasonably have been supposed that of two conjugated filaments, the whole of the one is male and the other female, but in opposition to this it generally happens that a part of the joints give out, and a part receive granules in the same filament. I have seen three filaments connected together, and the connecting tubes of the middle one have sometimes been thrown out by the joints on one side, and sometimes on the other, and the seeds have been formed in either filament, without apparent order. Each filament must therefore be considered hermaphrodite, possessing in its different joints both male and female powers, which, as in the

ſnail, can only be rendered productive by contact with the oppoſite powers of other filaments. Thus this apparently inſignificant tribe affords an unique and wonderful analogy between the reproduction of the animal and vegetable kingdoms, and is a ſtriking evidence that " the power of God is over all his works, and is ſeen to the aſtoniſhment of man in the variety of his wonders."

HYDRODICTYUM. — *Chaque articulation devient elle même une nouvelle plante qui s'étend comme un réseau.*

C. reticulata was firſt ſeparated from the *Conferva* under the generic name of *Hydrodictyon* by Dr. Roth, as is already mentioned, and no other plant has been ſince diſcovered with which it can be aſſociated. Its ſurpriſing mode of propagation is mentioned in my deſcription of this ſpecies, and I ſhall therefore only repeat that we are wholly indebted to the ſcrutinizing talents of M. Vaucher for this important diſcovery.

POLYSPERMA.—*Les grains ſont répandues en très grand nombre dans l'intérieur d'un tube renflé, non tranſparent et ramifié.*

C. fluviatilis and *glomerata* are the only ſpecies which M. Vaucher has been able to refer to the preſent genus, to which however he ſuſpects that ſeveral others alſo belong. He obſerved that the filaments of *C. fluviatilis* are lined with minute beaded threads, which at length divide, and each bead then becomes a ſeparate granule. He thinks it probable that a part of theſe grains, although they cannot be diſtinguiſhed from the others, are male organs which die away as ſoon as they have performed their office; a conjecture that ſeems rather ingenious than probable. He however aſcertained, by a courſe of well directed experiments, that at leaſt a part of theſe granules are true ſeeds, and traced their growth from the germination till they reſembled the parent plant in all reſpects. Theſe globules, both in their connected and detached ſtate, may be readily obſerved by cutting and preſſing the filaments, and, though I have failed in my endeavours to witneſs their germination, I cannot in the leaſt doubt the accuracy of M. Vaucher's obſervations, or ſuppoſe that this ſpecies is not propagated as he deſcribes. Tufts of young ſeedlings may be alſo fre-

quently obſerved, as he deſcribes them, iſſuing from the older filaments: theſe he attributes to the germination of ſeeds which have inſinuated themſelves from the interior to the ſubſtance of the frond, and thus grow paraſitically on their parent. M. Vaucher does not ſeem to have noticed the minute hair-like proceſſes that iſſue externally from the protuberances, between which and the beaded threads on the inſide, I have not been able to diſcover any connection. Upon the ſubject of theſe diſcoveries as to the ſtructure and fructification of the *Polyſpermiæ*, though I have here quoted M. Vaucher alone, having myſelf had an opportunity of conſulting no work but his, yet I feel it incumbent upon me to ſay, that the concurring teſtimony of German Botaniſts attributes the original detection of them to the late Dr. Mohr, who appears from what is ſaid by Dr. Roth, to have given an ample account of them in a number of Schrader's Journal for 1801, of which I am not aware that there is a copy at preſent in England.

C. fluviatilis differs widely in habit and appearance from other Britiſh Confervæ, agreeing in its real character probably with none but *C. toruloſa*, unleſs indeed the conjecture of my friend, Mr. Turner, be well founded, that *Fucus pedunculatus*, *F. aculeatus*, *C. verrucoſa**, and *C. villoſa* may belong to the ſame tribe. With reſpect to *C. glomerata*, which has not the leaſt affinity to any of theſe, M. Vaucher ſays little more than that he found its joints contain numerous minute granules, and thence concluded they were ſeeds. Of this, although he continued his obſervations with unremitted aſſiduity for two years, he could, however, obtain no further proof, than that the ſtones in a river were covered with ſomewhat ſimilar granules, which germinated and produced this ſpecies. He therefore determined on the arrangement of *C. glomerata* in this genus, but candidly allows, 'C'eſt bien plus l'analogie et le raiſonnement que les obſervations directes, qui nous ont conduit dans les conjectures que nous avons haſardées ſur ſon Hiſtoire.'

* I have omitted this ſpecies in my ſynopſis, becauſe having carefully examined its internal ſtructure, I am decidedly of opinion that it has no claim whatever to a place among the Confervæ. It will, I hope, appear in Mr. Turner's Hiſtoria Fucorum.

BATRACHOSPERMUM.—" *Chaque Anneau, après s'être ſeparé de l'ancienne Conferve, pouſſe de toutes parts des nouvelles ramifications.*"

In this genus, *Conferva gelatinoſa* and *mutabilis*, together with the *Conferva chara*, and *Rivularia elegans* of Roth, and *Ulva incraſſata* of Hudſon, are arranged by M. Vaucher, who is of opinion, " Que cette famille fort différente des autres ſe multiplie par ſes anneaux. Lorſqu'elle a acquis à peu près tout ſon accroiſſement, les anneaux dont elle eſt compoſée, ſe rompent et ſe ſeparent. Le plus grand nombre d'entr'eux, ſur tout lorſque toutes les parties de la Conferve ſe detruiſent en même temp, s'éloignent de manière qu'il n'eſt plus poſſible de les ſuivre. Les autres reſtent attachés aux filets à cauſe de leur viſcoſité; peu à peu ils croiſſent et s'étendent. La forme qu'ils ont alors n'est pas regulière, mais elle eſt aſſez ſemblable dans tous les grains. Inſenſiblement ils groſſiſſent; en même temps ils acquirent aſſez de tranſparence pour qu'on puiſſe voir dans leur intérieur la Batrachoſperme à laquelle ils doivent donner naiſſance; enfin l'envellope, qui les contenuit, ne pouvant plus ſe prêter à leur accroiſſement il en ſort de toutes parts un grand nombre de petites plantes, qui s'étendent en rayonnant autour d'un même point, et chaque filet eſt un tronc principal de la Conferve que ſe dévelope. Cet état de demi dévelloppement eſt celui des grains noirs que l'on aperçoit ſur la Batrachoſperme à collier (*Conferva gelatinoſa.*) Ils y ſont retenus, comme je l'ai dit, par des filets de la plante; et ſi on les examine au microſcope, on trouve à leur centre l'anneau dont il eſt ici queſtion, qui pouſſe de toutes parts des filets rayonnans et déjà articulés."

M. Vaucher, as well as Dr. Roth, has conjectured, that the delicate capillary threads which are ſeen iſſuing from the extremities of the ramuli of theſe plants, and conſtitute one of its moſt obvious characters, may be ſpermatick veſſels, but the only circumſtance which materially favors this idea is, that they fall off when the plant has attained to a certain age.

I have not been able to diſcover the fructification of any of the ſpecies arranged in this genus, except *C. gelatinoſa*. Of this I have given a drawing, and it appears to conſiſt of an aggregation of ſeeds, reſembling a compound berry,

which I have ſeen germinate, both whilſt attached to and when ſeparated from the parent plant. I am ſorry to differ ſo materially from M. Vaucher on this ſubject, and I apprehend it would not have been the caſe if he had uſed a higher magnifying power.

Whether M. Vaucher has done right in uniting the *Rivulariæ* with *Batrachoſpermum*, further obſervations are in my opinion ſtill wanting to decide. I confeſs myſelf inclined to believe that the fructification of theſe genera will be found to be different, but my friends, Mr. Turner and Mr. Hooker, whoſe united opinions muſt have far greater weight, agree with M. Vaucher that they ſhould be joined.

PROLIFERA.—*Il ſort des parties renflées ou des Bourrelets du vieux tube, des filets cylindriques qui s'étendent en tout ſens, et qui après avoir pris un aſſez grand accroiſſement, ſe ſéparent enſuite de leur Mère, pour devenir eux mêmes une Conferve parfaite.*

The following extract will ſerve more fully to ſhew M. Vaucher's idea of the manner in which theſe Confervæ are propagated. "Lorſque les prolifères ſont prêtes à ſe reproduire, on voit naître, le long des tubes des renflemens cylindriques, que l'on prendroit pour des nœuds, ſi la plante n'étoit pas d'ailleurs cloiſonnée. Ces Bourrelets d'abord peu ſenſibles, groſſiſſent bientôt, enſuite ils ſe couvrent d'une matière pulverulente qui eſt formée ou des debris qui flottaient dans le liquide, et qui ont été retenus par le Bourrelet; ou d'une matière qui s'eſt ſécrété de la Conferve. Lorſque cette pouſſière a ſéjourné quelque temps ſur le Bourrelet, on voit ſortir ſes nombreux filets qui forment d'abord de petites têtes arrondies. Malheureuſement cette pouſſière en même temps qu'elle ſemble favoriſer l'accroiſſement, gêne beaucoup l'obſervateur. On ne peut guères voir le premier dévelloppement de la jeune plante, et juger par exemple, ſi elle ſort de la ſurface du Bourrelet ou du centre. Quoi qu'il en ſoit, les jeunes filets s'étendent rapidement ſur toute la circonférence du Bourrelet où ils forment comme une houppe de poils. Peu à peu leur cloiſons commencent à ſe marquer, bientôt leurs tubes reſſemblent en petit à celui de la

grande prolifere; enfin ils se séparent pour aller former ailleurs un nouvel individu semblable à celui sur lequel ils ont pris naissance; *mais j'avoue que je n'aie pas vu de séparation*, quoique je n'aie aucun lieu de douter qu'elle ne s'opère."

I have now before me the variety mentioned in my description of *C. rivularis**, and more fully described in my synopsis, with short spine-like processes, resembling both in size and shape those figured on Vaucher's † *P. crispa*. If, as M. Vaucher imagines, these are a proliferous progeny, it must be supposed that they would resemble the parent, not only in their joints, but also in the shape of the filaments; the latter are, however, cylindrical throughout, and the former, at least in some species, are represented as remarkably acuminated; and of the processes of *C. rivularis* at this time under my observation, many, not the tenth of an inch in length, are as pointed as possible, although the diameter at their base equals that of the main filament. I examined this variety during a fortnight, but could not observe that the ramuli at all encreased in length, or suffered any change, till at the end of that period, the whole died away, and disappeared together. M. Vaucher has not noticed how far their length bears any regular proportion to that of the main filament, and he admits, contrary to his generic definition, that he has never seen them separate from it. In the description of *P. floccosa*, which is probably the same with my *C. punctalis*, he says, "Elle se multiplie avec une telle rapidité qu'elle couvre au bout de quelques jours des places considérables dans lesquelles on ne l'avoit pas d'abord aperçue," and yet he could never discover any proliferous tendency, or any other means whatever by which this increase was effected. I therefore wonder at this species having been arranged with the *Proliferæ*, but M. Vaucher possesses the rare merit of never concealing or distorting truth to serve a favorite theory, and expresses himself throughout so doubtfully of the use and nature of the branch-like processes, that it is rather surprising he should have founded the genus with such an uncertain character. It is nevertheless probable, from M.

* *Prolifera rivularis* of Vaucher differs from this species in its much longer joints.

† See the drawing of this species in my supplementary plate B.

Vaucher's deſcription, that the proceſſes which he obſerved on ſome ſpecies are of a different nature from thoſe reſembling thorns above mentioned. It ſeems to me that the fructification of the *Proliferæ* conſiſts in their internal granules, and, equally with thoſe of *C. fluviatilis*, it is reaſonable to ſuppoſe, that theſe ſeeds may in ſome inſtances become lodged, and germinate in the ſubſtance of the filament, which germination would neceſſarily occaſion the frond in that part to ſwell, and thus produce the *Bourrelets*, which M. Vaucher deſcribes. It does not, however, appear that the filaments thus generated ever arrive at maturity, and I am decidedly of opinion that this is not the mode deſigned by nature for the propagation of theſe Confervæ.

Oscillatoria.—This is the name given in M. Vaucher's Hiſtory of the *Tremellæ*, to the Confervæ of Dr. Roth's ſection '*Sporangiorum annulis*,' which are here arranged ſo as to conſtitute a ſeparate genus.

M. Vaucher obſerved that *C. fontinalis*, and thoſe of its congeners which float on the ſurface of water, are generally attended by "une eſpece de feutre" "douce et onctueuſe au toucher," which he ſuppoſes is of the ſame nature as the internal mucus of the *Tremellæ*, and he compares the filaments themſelves to the beaded granules of the *Linkiæ*. I have never ſeen this felt-like ſubſtance except with *C. fontinalis*, and have always conſidered it as decayed vegetable or other extraneous matter, in which the plant likes to grow, nor can I find that it bears the leaſt reſemblance to the internal mucus of a *Tremella*. At all events it is not ſufficiently general to warrant the removal of the genus; for M. Vaucher admits that it is not met with in any of the ſpecies which grow on ſtones, or on other ſubſtances, and theſe, I believe, conſtitute a majority of the genus. The ſuppoſed ſpontaneous motion of the filaments firſt noticed by M. Adanſon, and mentioned in my deſcription of *C. limoſa*, however, ſeems principally to have induced him to remove the *Oſcillatoriæ* from the *Confervæ* to the animal kingdom, for to this he ſuppoſes that the *Tremellæ* belong. During the laſt eight years I have frequently examined ſeveral ſpecies in hopes of diſcovering this mark of animality, but muſt confeſs I could never obſerve any motion

that might not be attributed to their wonderfully rapid growth, which muſt occaſion ſuch thickly entangled filaments to preſs againſt each other; to the water in which they are examined, the ſlighteſt motion of which is ſufficient to agitate them, or to the numerous animalculæ with which they are conſtantly infeſted.

It would exceed the limits of my preſent undertaking to give a detail of M. Vaucher's numerous conjectures, and curious remarks, and I ſhall therefore now confine myſelf to the relation of what I have myſelf obſerved concerning this family.

The *Oſcillatoriæ* conſtitute a natural genus, and are diſtinguiſhable at firſt ſight by their numerous filaments ſo thickly matted together as to form a jelly-like maſs. The filaments, when examined with the higher powers of a microſcope, appear to me equally obtuſe at both ends, and are regularly divided by remarkably delicate diſſepiments into extremely ſhort joints. Some of the diſſepiments may be obſerved of a darker color and thicker ſubſtance than the others, and at theſe I believe the filaments divide into ſeparate fragments, each of which, as M. Adanſon firſt obſerved, "Devient abſolument ſemblable a celui dont il s'étoit ſéparée, et capable d'en produire a ſon tour de nouveau." In *C. vaginata*, however, the filaments are multiplied by a longitudinal inſtead of a tranſverſe diviſion, as appears in my deſcription of that ſpecies. The diameter of the filaments of this family, never varies according to their age, as in other Confervæ, but is conſtantly the ſame in every ſpecies, and hence M. Vaucher has been led to ſuppoſe that they are always propagated by the viviparous diviſion only, and never by ſeed. This opinion I was for ſome time inclined to adopt, till it was ſhaken by an appearance of capſules on ſome ſpecimens of *C. decorticans*, which is repreſented in my ſupplementary plate. They are ſo unuſually large in proportion to the thickneſs of the filament, that at firſt ſight I thought they were of the ſame nature with galls, or thoſe excreſcences that are ſo frequently inhabited by the *Cyclops* on the *Vauchériæ*, but, when I applied the higheſt powers of my microſcope, I found their ſhape too regular and well

defined, and themſelves ſurrounded by a pellucid limbus ſo entirely reſembling that of many of the *Ceramia*, as to give them every appearance of true capſules. I kept the ſpecimens ſeveral days, but could not obſerve any ſeeds eſcape from them, nor have I ſince been able to diſcover any thing at all ſimilar in either this or any other ſpecies of *Oſcillatoria*, and ſubſequent diſcoveries have encreaſed my ſuſpicions that they were not capſules, and have induced me to believe that *C. decorticans*, as well as the other ſpecies of this family, are propagated by ſeed in a different manner.

In examining ſome ſpecimens of *C. diſtorta*, I obſerved a number of detached globules of the ſame color, and of about equal diameter with that of the filaments, and I alſo obſerved that in ſome filaments which were partly empty, the remaining joints had aſſumed a ſimilar globular ſhape. Some of the detached globules had become of an oblong form, and a diſſepiment was then obſervable in the middle, while others were more elongated with four joints, and others were ſtill longer, ſo as to form a regular ſeries, beginning with the globule, and ending in a perfect filament. I have, therefore, no doubt, ſo far as it is poſſible to ſtate any opinion on objects ſo minute and obſcure without any doubt, that each joint at length becomes a ſeed, which eſcapes at the apex of the filament, and that by its evolution the ſpecies is propagated. I have obſerved a preciſely ſimilar appearance in *C. mirabilis*, and have alſo ſeen detached granules, apparently of the ſame nature among the filaments of *C. fontinalis* and *C. muralis*, and in both theſe ſpecies, thoſe filaments which are partly empty have their remaining joints of a more globular form, than they are in thoſe which continue perfect.

I have aſcertained that the filaments of *C. diſtorta* conjugate in a ſingular manner, (which, together with the fructification, is repreſented in my ſupplementary plate A) and that the ſuppoſed ramifications of this ſpecies are thus conſtituted. *C. diſtorta* is therefore moſt cloſely allied with *C. mirabilis* and *C. majuscula*, and I incline to the opinion that here, as well as in the *Conjugatæ*, an union of their filaments is in ſome manner eſſential to their fructification.

The *Oſcillatoriæ*, beſides their general accordance in ſtructure, are connected in different points by *C. diſſiliens* and *confervicola* with the other *Confervæ*, nor can I, with all due deference to the opinion of M. Vaucher, allow myſelf to doubt that the propriety of retaining them among the ſubmerſed Algæ in the vegetable kingdom will be admitted by almoſt every Naturaliſt, and eſpecially by thoſe who make this department of Botany their ſtudy.

To conclude, although I cannot give implicit aſſent to all M. Vaucher's obſervations and deductions, yet the greater part of his phyſiological diſcoveries are ſo well eſtabliſhed and ſo important, that they form a memorable epoch in the hiſtory of the ſubmerſed Algæ. He has the credit of having firſt raiſed a Conferva from ſeed, and of having traced it through the different ſtages of its growth, and, to mention one only of his many diſcoveries, that of the wonderful propagation of *C. reticulata*, is in itſelf ſufficient to render his name reſpectable, as long as ſcientific merit continues to be held in eſteem.

SECTION IV.

SYSTEM OF DECANDOLLE.

I NOW turn to Decandolle, whoſe arrangement of the ſubmerſed Algæ in the *Flore Francoiſe*, and *Flora Gallica*, is however hardly worth notice. It is principally formed by incorporating the two foregoing ſyſtems, with much alteration but little or no improvement in their genera, as will be ſufficiently ſhewn by the following outline of his arrangement.

NOSTOC.—*Integumentum vireſcens membranaceum intus farctum gelatina mucoſa filamentis moniliformibus intertexta.*

In M. Vaucher's ſyſtem, *Tremella* conſtitutes an order which is referred to the animal kingdom, and compriſes the two genera of *Oſcillatoria* and *Noſtoc*.

The latter contains the plants usually called *Tremellæ*, which M. Decandolle, under Vaucher's generic name, has here restored to their place in the vegetable kingdom.

RIVULARIA.—*Membranæ subcartilagineæ, lobatæ aut ramosæ, muco gelatinoso obtectæ.*

This however is not Dr. Roth's genus, but rather the same with *Ulva* of Vaucher, and contains, 1st. his *U. gelatinosa*, under the name of *R. tubulosa*. 2d. *Ulva lubrica* of Roth. 3d. *R. fœtida*, which is probably my *C. fœtida*, and 4th, a new species, with the name of *R. Halleri*.

ULVA.—*Frondes membranaceæ. Semina sub epidermide latitantia, sæpius aggregatæ, frondis ipsius destructione exeuntia.*

This genus in addition to most of the *Ulvæ*, comprises all the *Ulva-like Fuci*, with *F. digitatus*, *F. bulbosus*, *F. tomentosus*, &c.

FUCUS.—*Algæ marinæ membranaceæ aut filamentosæ. Capsulæ aut semina aggregata in tuberculos nunc laterales, nunc terminales, apice poro dehiscentes.*

The genus as here constituted comprises a part only of the plants usually called by the name of *Fucus*, some having, as is above mentioned, been removed to the *Ulvæ*, and *F. pinastroides* and *F. filum* to the following family. *Ulva plumosa*, which Dr. Roth has carried to his genus *Conferva*, is here, and with equal impropriety, described under the name of *Fucus arbuscula*.

CERAMIUM.—*Stirpes filamentosæ marinæ simplices aut ramosæ, dissepimentis transversalibus nodoso-articulatæ; tubercula polysperma sub globosa lateralia aut terminalia.*

The species of Dr. Roth's second division of *Ceramium*, '*filis spurie geniculatis*' constitute this genus, and those of the first division are sent back to the Fuci.

DIATOMA.—*Plantæ pseudo-parasiticæ oculo nudo vix conspicuæ, filamentis simplicibus articulatis, articulis in adulta planta transversim sectis.*

The species arranged in the section "*articulis solutis*" of my synopsis, consti-

tute a natural family, and may be all referred to this genus, in which however only Roth's *C. mucor* and *C. flocculosa* are here enumerated.

CHANTRANSIA.—*Filamenta ramosa, dissepimentis instructa; semina minutissima, intra filamenta recondita, in quoque articulo numerosa.*

This genus is named by M. Decandolle in honor of M. Girod Chantrans. With one of the eight species here enumerated I am entirely unacquainted, and the remaining seven may be referred to at least three different natural families. 1st. *C. torulosa* and *C. fluviatilis* belong to Vaucher's *Polysperma*, with which *C. glomerata* also here retained certainly possesses no affinity. 2d. *C. atra*, which in my opinion is undoubtedly a *Batrachospermum*. And 3d, *C. rivularis*, *C. crispa*, and *C. vesicata* of Vaucher, which belong to his family of *Proliferæ*.

CONFERVA.—*Filamenta simplicia, dissepimentis instructa, interdum ope tubuli inter se conjuncta, materia vividi, nunc spiraliter, nunc bistellatim, nunc sparsim disposita intra loculos farcta. Semina in quoque loculo solitaria.*

The genus as here constituted is the same with *Conjugata* of Vaucher, and contains all the species arranged as such in the *Historie des Conferves d'eau douce*. *Prolifera parasitica* and *P. floccosa* of the same author, are also added under a separate section, entitled, "*Haud planè notæ.*"

BATRACHOSPERMUM.—*Filamenta muco gelatinoso obtecta, ramosa, ramis filo hyalino plus minusve elongato terminatis; annulis ovatis, solidis, ad extremum progrediendo decrescentibus. Corpusculis hirtis (plantularum rudimentis) inter ramos sparsis..*

This genus is the same with Vaucher's *Batrachospermum*, and is intended to comprehend the whole of the *Rivulariæ*, as well as the *Batrachosperma* of Roth.

HYDRODYCTION.—*Habitus saccatus, fère clausus, retiformis, interstitiis, seu areolis polygonis.*

C. reticulata, as in the systems of Roth and Vaucher, is here placed by itself.

VAUCHERIA.—*Filamenta herbacea dissepimentis planè destituta. Semina externa, primo tubo adfixa, tandem caduca.*

This, as I have before remarked, is the same with Vaucher's genus *Ectosperma*.

SECTION V.

CONFERVÆ OF HUDSON.

Having, through the kindneſs of Dr. Williams, had repeated acceſs to the Dillenian Herbarium, and received ſome valuable information reſpecting the ſynonymy of the Flora Anglica from Sir Thomas Frankland and the Rev. Hugh Davies, who were both intimately acquainted with its diſtinguiſhed author, I feel happy in being able to remove the uncertainty that has hitherto attended the elucidation of many of Hudſon's Confervæ. I ſhall therefore offer a few obſervations on each of the doubtful ſpecies, and refer the remainder to the correſponding figures of the preſent work.

1. *C. rivularis.* T. 39. Var. β. is *C. nitida* T. 4.

2. *C. fontinalis.* T. 64.

3. *C. violacea.* A plant which exactly agrees with Dillenius's and Lightfoot's deſcriptions, and alſo with ſome of the ſpecimens in the Dillenian Herbarium, grows abundantly on the ſtones in ſome rapid rivulets in the neighbourhood of Swanſea, and ſeems to be only a ſlight variety of *C. decorticans.* Mr. Dickſon gave me a ſpecimen of *C. diſtorta,* gathered in the Highlands, under the name of *C. violacea*; but, although the former, eſpecially when dried, is of a ſtriking violet color, yet it differs entirely from the latter in its mode of growth, as deſcribed by Dillenius.

4. *C. furcata.* The late Mr. Pitchford gave me an authentic ſpecimen, marked by Hudſon "*C. furcata,*" which is nothing but a narrow variety of *C. dichotoma* I have little doubt that Dillenius's No. 10, which Hudſon calls *furcata* β, is a variety of *C. amphibia*:—*C. amphibia* and *C. dichotoma* are, however, very cloſely allied.

5. *C. dichotoma.* T. 15.

6. *C. bulloſa.* I think there can be no doubt that many of the ſpecies whoſe

filaments grow ſufficiently entangled to retain air bubbles, and are thereby floated on the ſurface of the water, were confounded together, and conſtitute the preſent ſuppoſed ſpecies.

7. *C. canalicularis* ſeems to me certainly nothing more than one of the numerous varieties of *C. amphibia*, which grows about mills and other falls of water, exactly as Dillenius has deſcribed it. This opinion is confirmed by Mr. Turner's *Obſervations on the Dillenian Herbarium*, publiſhed in the *Tranſactions of the Linnæan Society*.

8. *C. amphibia*. T. 41.

9. *C. rigida*. My own obſervations at Oxford confirm Mr. Turner's opinion, that this is nothing but *C. glomerata* encruſted with ſome extraneous matter.

10. *C. fæniculacea*. This is a Fucus, as appears both by the Dillenian Herbarium, and by a ſpecimen which Mr. Davies received from Hudſon. By calling it a Fucus I do not mean to expreſs any opinion upon its fructification, which is at preſent unknown, but merely to ſay that it is quite deſtitute of joints.

11. *C. littoralis*. T. 31.

12. *C. tomentoſa*. T. 32.

13. *C. albida*. This plant, which has long been wholly unknown to Botaniſts, appears from a very careful examination of the Dillenian ſpecimen, by Mr. Hooker, Mr. Turner, and myſelf, under the microſcope, to be really a diſtinct ſpecies, and is ſo deſcribed in my ſynopſis, and figured in the ſupplementary plate E. Mr. H. Davies has obligingly favored me with a plant which had been ſo named by Hudſon, and which is the *C. Hookeri* of this work.

14. *C. æruginoſa* is deſcribed in my ſynopſis from the Dillenian ſpecimen, of which a fragment is alſo repreſented in the ſupplementary plate E.

15. *C. nigra*. Authentic ſpecimens in the Herbaria of Sir Thomas Frankland, and the Rev. H. Davies, prove that my *C. atro-rubeſcens* is this ſpecies.

16. *C. ſcoparia*. T. 52.

17. *C. cancellata* is *Sertularia ſpinoſa*.

18. *C. multifida.* This, as well as *C. imbricata*, on the authority of an authentic ſpecimen ſent by the Biſhop of Carliſle to Mr. Turner, appears clearly to belong to the *C. equiſetifolia* of this work, T. 54; I have, however, retained the name of *C. multifida* to the plant ſo called in *Engliſh Botany*, as the name, though then erroneouſly applied, is really applicable to the plant, and, not being attached to any other, may fairly be left to it.

19. *C. ſpongioſa.* T. 42.

20. *C. reticulata.* T. 97.

21. *C. fluviatilis.* T. 29.

22. *C. atra.* T. 11.

23. *C. gelatinoſa.* T. 32.

24. *C. capillaris.* T. 9.

25. *C. corallina.* T. 98.

26. *C. ſetacea.* T. 82.

27. *C. elongata.* T. 33.

28. *C. ciliata.* T. 53.

29. *C. polymorpha.* T. 44.

30. *C. tubuloſa.* The ſpecimen according with Hudſon's reference, in the Dillenian Herbarium, ſeems, as Mr. Turner remarked, to be only an unuſually thick variety of *C. rubra*, and I have myſelf gathered nearly ſimilar appearances of this ever varying ſpecies.

31. *C. rubra.* T. 34.

32. *C. purpuraſcens.* The ſpecimen No. 41 in the Dillenian Herbarium, does not appear to me to be diſtinct from *C. roſea*, and I have little doubt that this is the ſpecies here deſcribed by Hudſon. It however ſeems better, eſpecially as the matter is in ſome degree queſtionable, that it ſhould be continued with the name of *C. roſea*, by which it is now univerſally known.

33. *C. noduloſa* . On the authority of Mr. Turner is *C. diaphana.* T. 38.

34. *C. pellucida.* T. 90.

35. *C. vagabunda.* There can, I apprehend, be no doubt, from Dillenius'

deſcription, ſpecimen, and figure, that *C. fracta*, T. 14, is the ſpecies here intended.

36. *C. rupeſtris*. T. 23. The ſpecimen No. 28 of the Dillenian Herbarium, to which Hudſon refers as his variety β of this ſpecies, is much injured, but I have little doubt that it is *C. diffuſa*. T. 21.

37. *C. ſericea*. In the Dillenian Herbarium there are two ſpecimens under the name of *C. marina trichoides virgata ſericea*, of which one is marked "ex aquis dulcioribus," the other "e maritimis;" and of theſe the former is a trifling variety of *C. glomerata*. I have never ſeen *C. glomerata* with a ſimilar appearance to that of the latter, or having the branches ſo much elongated, but from the look of the joints, diſpoſition of the ramuli, and place in which it was gathered, it may probably be Dr. Roth's variety β. *marina* of that ſpecies. According to the *Flora Anglica*, *C. ſericea* grows "in rupibus et ſaxis ſubmarinis;" and I cannot help ſuſpecting that Hudſon confounded *C. læte vireus* with other plants under this name, but neither that ſpecies, nor either of Dillenius's ſpecimens have the leaſt affinity with *C. littoralis*, to which in the *Hiſtoria Muſcorum* it is ſaid to be cloſely allied, and I therefore doubt whether *C. ſericea* can be regarded as a ſingle ſpecies.

38. *C. glomerata*. T. 13.

39. *C. fulva*. I ſuſpect that *C. repens*, T. 18, is the plant here deſigned, but proof is wanting.

40. *C. nigreſcens*. Following the generally received opinion among Botaniſts, I have in my ſynopſis agreed with Dr. Smith in retaining the appellation of *C. nigreſcens* to the plant ſo called in *Engliſh Botany*, though, in ſo doing, I have acted in oppoſition to my own private opinion, and to the authority of Sir Thomas Frankland, who communicated to me a ſpecimen of *C. urceolota* under that name.

41. *C. fuſca*. T. 95.

42. *C. fucoides*. T. 75.

43. *C. villoſa*. T. 37.

44. *C. imbricata*, as above mentioned, is *C. equiſetifolia*. T. 54.
45. *C. coccinea*. T. 36.
46. *C. pennata*. T. 86.
47. *C. paraſitica* of Engliſh Botany, t. 1429, and of my Synopſis.
48. *C. ægagrophila*. T. 87.

I AM proud to acknowledge the flattering manner in which moſt of thoſe Botaniſts who are diſtinguiſhed by their knowledge of the ſubmerſed Algæ have aſſiſted me in this work. Mr. Turner in the moſt friendly manner has exerted himſelf to procure and give me all the information in his power, and to him I am indebted for the deſcriptions of *C. arbuſcula*, *ægagrophila*, *orthotrichi*, and *pellucida*. Sir Thomas Frankland, Bart. and the Rev. Hugh Davies, have obligingly communicated ſome authentic ſpecimens in their poſſeſſion, and thereby enabled me to fix the ſynonymy of ſeveral of Hudſon's ſpecies, with greater certainty than would otherwiſe have been poſſible. To James Brodie, Eſq. Joſeph Woods, junr. Eſq. William Jackſon Hooker, Eſq. William Borrer, junr. Eſq. Miſs Hutchins, and Mr. William Weſton Young, I am indepted for the diſcovery of many new ſpecies, and I am ſtill further indebted to Mr. Hooker and Mr. Woods for ſeveral beautiful drawings with which they have favored me, nor muſt I omit to acknowledge the ſervice which that part of my undertaking has received from the profeſſional talents of Mr. Young. I have alſo to thank Dr. Turton for his readineſs at all times to aſſiſt me. To the Right Hon. Sir Joſeph Banks I am under great obligation for the free acceſs which he has allowed me to his invaluable Library and Herbarium; and to Dr. Williams, Profeſſor of Botany, at Oxford, for the opportunity he has liberally afforded me of examining the ſpecimens in the Dillenian Herbarium.

SYNOPSIS OF THE BRITISH CONFERVÆ.

With Notes, and a Description of the Species not elsewhere mentioned in this Work.

The descriptions which I have marked with an asterisk are taken from dried specimens.

A. *Subarticulatæ.*†

1. *dichotoma.* C. filis subarticulatis dichotomis, fasciculatis, strictis, fastigiatis, viridibus; ramis elongatis, remotis. T. 15.

What I have described as capsules under this species, Dr. Roth supposes to be the eggs of insects, and I regret that I have since had no opportunity of re-examining them. Mr. Turner has observed, that when kept but a short time in water they fall off in great numbers, but he says that their appearance is precisely similar to that of the capsules of other *Vaucheriæ.*

† The four first species of this division belong to the Vaucherian genus *Ectosperma*, lately taken up (most injudiciously in my opinion) in English Botany by the name of *Vaucheria.* The able author of the *Hist. des Conf. d'eau douce* has described many plants as distinct species of this genus, of which by far the larger part have been found in Britain, but, as has already been observed in the introduction to this work, p. 17, I have every reason to believe that these, instead of being ranked as species, do not even deserve to be considered as varieties, all of them depending upon the capsules, of which the number and situation vary in the same individual. I have therefore not only here omitted to notice them, as I thought that the so doing would unnecessarily swell the number of my species, but I even doubt whether of the four here described the three latter are specifically distinct from each other.

2. *amphibia.* C. filis ſubarticulatis, ramoſis, denſiſſimè implexis, obſcurè viridibus; ramis ſparſis, patentibus, remotis. T. 43.

3. *veſicata.* C. filis ſubarticulatis, ramoſis, rigidis, fuſco-viridibus; veſiculis innatis, ſolitariis, ellipticis, filamento latioribus. T. 74.

Ectoſperma ſeſſilis. VAUCHER. *Hiſt. des Conf.* p. 31. t. 2. f. 7. *Eng. Bot.* t. 1765.

4. *Dillwynii.* C. filis ſubarticulatis, procumbentibus, ramoſis, viridibus; ramis ſubdichotomis, alternis.

C. frigida. T. 16.

C. Dillwynii. WEBER and MOHR. *Groſs. Brit. Conf.* II. p. 14. t. 16.

Ceramium Dillwynii. ROTH. *Cat. Bot.* III. p. 117.

Ectoſperma terreſtris. VAUCHER. *Hiſt. des Conf.* p. 27. t. 2. f. 3.

C. frigida of Roth, to which I had erroneouſly referred this ſpecies, is my *C. muralis*, and probably the plant deſigned in Engliſh Botany under the name of *V. geminata*, t. 1766, is nothing more than this ſpecies, as I have ſeen ſimilar fruit both upon *C. amphibia* and *C. Dillwynii.*

5. *Myochrous.* C. filis ſubarticulatis, ramoſis, implexis, fuſcis; ramis ſimplicibus, ſubſecundis, geminis, incurvis. T. 19.

Since the publication of this ſpecies, Mr. Woods and myſelf have found it in various parts of Wales, and Miſs Hutchins has gathered it in the neighbourhood of Bantry. Mr. Hooker and Mr. Borrer brought laſt year from the cave in the Iſle of Skye, called Sloch Altramine, a variety of this ſpecies, of a dark green color and looſe mode of growth, with filaments above an inch long.

6. *Comoides.* C. filis ſubarticulatis, ramoſis, ferrugineis; ramis ſparſis, remotiuſculis, apice acuminatis. T. 27.

Since I publiſhed the deſcription of this ſpecies, it has been found at Yarmouth by Mr. Turner, and in Suſſex by Mr. Borrer, and by Mr. Woods at Dover. It ſeems probable that *C. rufa* of Roth's *Cat. Bot.* III. p. 280, is the ſame plant, in confirmation of which, and of the opinion given in

the note at the beginning of this ſection, and in the introduction as to the *Ectoſpermæ*, I copy the following Extract from a Letter from the late Dr. Mohr to Mr. Turner.

" Taking this plant for the true *C. comoides* of Dillwyn, I ſoaked my original ſpecimen of it, and what did I find? An *Ectoſperma* of the Rev. M. Vaucher, but as Dr. Roth has remarked, without capſules as they are called. I hardly think there is more than one ſpecies of *Ectoſperma* in the world, (which may ſeem very paradoxical) but if there are more to be diſtinguiſhed, you will allow it can only be done by regarding the Vaucherian grains or Rothian capſules."

B. *articulatæ, filis cylindricis.*

a. *articulis breviſſimis.*†

* *ſimplices.*

7. *fontinalis.* C. filis ſimplicibus ſtrictis, brevibus faſciatis, atro virentibus; diſſepimentis diſtinctis; articulis breviſſimis. T. 64.

From the deſcriptions in the third faſciculus of the *Catalecta Botanica*, it may be doubted whether Dr. Roth's *C. limoſa* is not *C. fontinalis* of Hudſon, and vice vêrſa.

8. *limoſa.* C. filis ſimplicibus, ſtrictis, tenuiſſimis, faſciatis lubricis, mucoſis, cœruleo-virentibus; diſſepimentis obſoletis; articulis breviſſimis. T. 20.

9. *decorticans.* C. filis ſimplicibus, curvis, tenuiſſimis faſciatis, denſiſſimè contextis, cœruleo-virentibus; diſſepimentis obſoletis; articulis breviſſimis. T. 26 and T. *A.*

C. violacea. Fl. Ang. p. 592.

C. confragoſa. Fl. Scot. p. 976.

† In this diviſion are comprehended the *Oscillatoriæ* of Vaucher, a moſt diſtinct and natural tribe of Confervæ, which will in all probability hereafter form a ſeparate genus. I exceedingly regret that I have not been able to find a more happy definition of this diviſion, not knowing, as is already obſerved in the Introduction, how to characteriſe the particular ſtructure of the joints, which ſeem unlike thoſe of all other Confervæ.

C. mucosa confragosis rivulis innascens. DILL. Hist. Musc. p. 15. t. 2. f. 4.

In the supplementary plate *A* I have given a highly magnified drawing by Mr. Young, of the appearance of capsules on this species, which is described in my introduction. Although there can be scarcely any doubt of the propriety of the above references, as has been mentioned in my remarks on Hudson's species, yet more than one species having been described under the name of *violacea*, I have thought it best to retain that of *decorticans*, by which it is now generally known, and which is very characteristic of the plant.

10. *muralis.* C. filis simplicibus, curvis, longis, rigidiusculis, sparsis, fasciatis viridibus; articulis brevissimis. T. 7.

C. muralis. ROTH. *Cat. Bot.* III. p. 189.

C. frigida. Cat. Bot. I. p. 166. *Fl. Germ.* III. pars. 1. p. 491.

11. *confervicola.* C. filis simplicibus, abbreviatis, fasciculatis, liberis, fasciatis, intensè æruginosis, apice acuminatis; articulis brevissimis. T. 8. and T. *A.*

Since the publication of this species, Mr. Hooker has discovered on some specimens, capsules surrounded by a pelludid limbus, and transverely divided by a pellucid line in the same manner as those of *C. interrupta.* The acuminated apices of this species and of *C. scopulorum*, have always made me doubtful whether they should be regarded as true *Oscillatoriæ*, and this suspicion has been strengthened by Mr. Hooker's discovery. For the highly magnified sketch of one of these capsules, made from a recent specimen and given in my supplementary plate *A*, I am indebted to Mr. Hooker.

12.* *scopulorum.* C. filis simplicibus, curvis, abbreviatis, fasciatis, atro-virentibus, basi per viscositatem cœherentibus, apice attenuatis; articulis brevissimis. T. *A.*

C. scopulorum. WEBER and MOHR *Reise durch Schweden*, p. 195. T. 3. f. 3. ROTH, *Cat. Bot.* III. p. 191.

On Planks in the Sea, between Bognor and Aldwick; *Mr. Borrer.*

Rocks by the Sea ſide at Cawſie, Murrayſhire; *Mr. Hooker* and *Mr. Borrer.*

Mr. Hooker by comparing the plants gathered in the above mentioned places with Mr. Turner's authentic ſpecimens from Dr. Mohr, aſcertained the propriety of the preſent reference. It is nearly allied to *C. confervicola*, but differs in its far darker color, ſhorter filaments, and in the ſingular manner by which they appear agglutinated together towards the baſe. The drawing in the ſupplementary plate A was made from a dried ſpecimen by Mr. Hooker. The plant is repreſented of its natural ſize, and alſo when magnified with powers 3 and 2 of a compound microſcope.

** *coadunatæ.*

13. *vaginata.* C. filis in vaginâ ramoſo-faſciculatis, abbreviatis, cœruleo-vireſcentibus; articulis breviſſimis. T. 99.

C. vaginata. Eng. Bot. t. 1995.

Since I publiſhed the deſcription of this ſpecies, it has been found by Miſs Hutchins, growing on *Hypnum prælongum* in the neighbourhood of Bantry.

14. *mirabilis.* C. filis ſpurie ramoſis, breviuſculis ſtrictis, cœruleo-vireſcentibus; ramis e coadunatis genuflexuris filamentorum; articulis breviſſimis. T. 96.

15.* *majuſcula.* C. filis ſpurie ramoſis, criſpatis, elongatis, laxè implicatis, atro vireſcentibus; ramis e filamentis coadunatis; articulis breviſſimis. T. *A.*

In the Sea. On Santon Sands, near Plymouth; *Miſs Hill.* Bantry Bay; *Miſs Hutchins.*

This ſpecies is nearly allied to *C. diſtorta* and *C. mirabilis*, the branches being ſometimes united in the manner of the former, and ſometimes as in the latter. It may be diſtinguiſhed from both of theſe, as well as from the other *Oſcillatoriæ*, by its remarkably curled and twiſted filaments, and by

their ſomewhat greater diameter. It grows in thick tufts, not unfrequently three inches in length, and of a very dark blackiſh green color. For the drawing, which is made from a dried ſpecimen, and repreſents the filaments when magnified with powers 2 and 1, I am indebted to my friend Mr. Hooker.

16. *diſtorta.* C. filis ſpurie ramoſis, ſub-ſtrictis, cœruleo-vireſcentibus; ramis e filamentis coadunatis, diſtortis; articulis breviſſimis. T. 22 and T. *A.*

The figure of this plant, T. 22, is erroneous as far as relates to the branches, which inſtead of being as there repreſented, appear rather to be merely different filaments united together in the ſame way as thoſe of *C. mirabilis.* The affinity between theſe two ſpecies is very ſtrong, and the leading difference ſeems to be that in *C. mirabilis* the ſides of the two filaments are joined and continue longitudinally united, whereas in *C. diſtorta* the end only of one filament is attached to the ſide of another. This curious union is repreſented in my ſupplementary plate A, as it appears with power 1 of the microſcope, and alſo the fructification which I have deſcribed in the introduction to this work.

b. *articulis longis.*

* *ſimplices.*

17. *zonata.* C. filis ſimplicibus, tenuibus, lubricis, vireſcentibus; articulis diametrum longitudine vix ſuperantibus, granulis in faſcias latas coarcervatis.

C. zonata. WEBER and MOHR. *Reiſe durch Schweden*, p. 97. T. 1. f. 7.

a. b. ROTH. *Cat. Bot.* III. p. 269.

C. lubrica. T. 47.

Found lately at Lound, near Yarmouth, by Mr. Hooker, and in Suſſex by Mr. Borrer.

18. *rivularis.* C. filis ſimplicibus, tenuibus, longiſſimis, densè compactis, plerumque contortis, intensè viridibus; articulis diametro ſeſqui longioribus. T. 39.

β. *aculeata.* Spinulis ramuliformibus. T. *A.*

I firſt diſcovered the preſent ſuppoſed variety in company with my friend Joſeph Woods, junr. in ſome dark ſhady rills on Finchly Common, and afterwards in a ſhady well on Stamford Hill, and in a ſimilar well near Yarmouth. It may be at once diſtinguiſhed by the naked eye from the more common ſtate of *C. rivularis* by its ſtill darker color, but under the microſcope it appears to differ only in its numerous ſhort ſpine-like proceſſes, of which the joints reſemble thoſe of the main filament, except that they become gradually narrower, and at length terminate in a fine point. Theſe thorn-like proceſſes bear a conſiderable reſemblance to the ramuli of *C. lubrica*, both in the ſize, ſhape and irregularity of their diſpoſition, but of their nature I am ſtill unable to ſatisfy myſelf further than that for reaſons given in my introduction, they are not occaſioned by a proliferous germination. The drawing at figure 3 of the ſupplementary plate A, was made in 1802, with power 1 of my microſcope, from the plant which I then gathered near Finchly. With the ſketches marked 1 and 2 (of which the former repreſents the plant when ſlightly, and the latter when highly magnified) I have been favored by Mr. Woods, who has ſince diſcovered this appearance of the ſpecies in ſeveral places about London. It grows not like the foregoing in ſprings, but in pools and ditches which are dried up early in the ſummer, and ought perhaps to be regarded as a ſeparate variety. Some of the filaments are entirely ſimple, and theſe reſemble thoſe of *C. rivularis;* in others there are a few acuminated proceſſes ſimilar to thoſe above mentioned, whilſt others are beſet with crowded proceſſes of various lengths, and of theſe the longeſt are leſs acuminated than the others, and are again ſometimes furniſhed with other extremely ſhort ſecondary ſpines.

19. *bipartita.* C. filis ſimplicibus, tenuibus, longiſſimis densè compactis, flavo-virentibus; articulis diametro ſub-triplo longioribus, demum bipartitis. T. 105.

20. *fugaciſſima.* C. filis ſimplicibus tenuibus flavo virentibus; articulis pellucidis medio ſœpe granulis faſciatis, diametro ſub-ſeſquilongioribus. P. *B.*

C. fugaciſſima. ROTH. *Cat. Bot.* III. p. 176.

Frequent in Pools and Ditches, adhering to glaſs and other ſubſtances.

In Mr. Turner's Herbarium there are two ſpecimens from Dr. Roth, marked *C. fugaciſſima*, of which one belongs to *C. ſordida*, and the other to the preſent ſpecies. It is moſt nearly allied to *C. ſordida*, but may be at once diſtinguiſhed by its far ſhorter joints. By drying *C. fagaciſſima* loſes its color, and gradually becomes of a dirty white. The ſketch at Plate B. repreſents a filament magnified 1.

21. *ſordida.* C. filis ſimplicibus, tenuibus, flavo virentibus; articulis pellucidis, diametro quadruplo longioribus. T. 60.

22. *alternata.* C. filis ſimplicibus, tenuibus, glauco vireſcentibus; articulis hic illic inflatis, alternatim pellucidis obſcuriſque, diametro ſeſquilongioribus.

Prolifera veſicata. VAUCHER. *Hiſt. des Conferves*, p. 132. t. 14. f. 4. (exc. ſyn.)

β. *fuſceſcens*, filis fuſceſcentibus, T. *B.*

In a rivulet near Swanſea; β. In ditches at Stoke Newington; *Mr. Woods.* On decayed leaves in the ditches at Heigham, near Norwich; *Mr. Hooker.* Ditches about Belfaſt; *Mr. Templeton.* Pools near Bantry; *Miſs Hutchins.*

The filaments grow in looſely entangled maſſes, ſix or eight inches in length, and are of about the ſame diameter as thoſe of *C. ſordida.* The color of the plant, which I once gathered near Swanſea, agreed with Vaucher's deſcription and was of a glaucous green. The joints are alternately opake and pellucid, and ſome of them in almoſt every filament are remarkably inflated, by which this ſpecies may be readily diſtinguiſhed from its congeners. The variety β. appears to differ in no other reſpect

than in being of a brown color, and of this Mr. Hooker favored me with the magnified ſketch given in my ſupplementary plate B.

23. *faſciata.* C. filis ſimplicibus, tenuibus, mucoſis, purpureo-fuſcis; articulis medio faſciâ anguſtâ tranſverſim notatis, longitudine diametrum æquantibus. T. *B.*

On decaying ſticks, leaves, &c. in a ditch at Stoke Newington; *Joſeph Woods, junr. Eſq.*

Mr. Woods diſcovered this ſpecies growing in ſlippery maſſes about one and a half inch long, of a purple brown color, and forming a thick coat over decaying ſubſtances in a ditch at Stoke Newington. The length and diameter of the joints is equal, and in the middle of each there is the appearance of a dark narrow tranſverſe band, which however proceeds from the internal organization of the plant, and therefore appears ſomewhat ſhorter than the diameter of the filament. For the drawing in my ſupplementary plate B, which was made with power 1 of the microſcope, I am indebted to my friend Mr. Woods.

24. *lineata.* C. filis ſimplicibus tenuibus, fragilibus, fuſcis; diſſepimentis contractis; articulis lineâ unâ alterave tenuiſſimâ tranſverſim ſtriatis, diametro ſub-triplo longiorbus. T. *B.*

Among the leaves of water plants in the River Lea at Walthamſtow.

In March, 1802, I found a ſingle ſmall ſpecimen of this ſpecies among a jelly-like ſubſtance of the Tremella kind, which almoſt covers the water plants in the Lea at Walthamſtow. The filaments are ſimple, very brittle, contracted at the diſſepiments, and of a brown color. The length of the joints in ſome filaments is about thrice, and in others not more than twice the diameter, and they are generally marked with one or two tranſverſe lines at uncertain diſtances from each other. I have not ſince been able to find more than a few imperfect filaments of this plant, and in one of theſe now before me, I obſerve one or two joints much ſhorter than the others, whoſe length ſcarcely exceeds the diameter, and which in appearance ſome-

what approach thoſe of the following ſpecies before they aſſume their oval form. The general appearance of the two plants is however entirely diſſimilar, but Dr. Roth's account of the wonderful changes which he has obſerved in his *C. annulina*, almoſt induce me to ſuſpect that they may poſſibly both belong to the ſame ſpecies. For the lower of the two ſketches in Tab. B, I am indebted to my friend Mr. Woods, and they are both made with the higheſt power of a compound microſcope.

25. *nummuloides.* C. filis ſimplicibus, tenuibus, fragilibus, fuſco aureis; articulis diametro ſub-brevioribus, demum in glomerules ſub-ovales, moniliformes, approximates mutatis. T. *B.*

Among the leaves of water plants in the River Lea at Walthamſtow.

In March, 1802, I found a few detached filaments of the preſent plant, mixed with thoſe of *C. lineata*, among the Tremella-like ſlime with which, as before mentioned, many of the plants in the River Lea are covered. I have not diſcovered any filaments which appear to be at all perfect, but they ſeem ſufficiently ſo to prove that the plant differs materially from every other Britiſh ſpecies, and by publiſhing this imperfect account I truſt that I ſhall induce ſome other Botaniſt to ſearch for it, and more completely aſcertain its nature. The filaments are cylindrical, of a brittle nature, and reddiſh, yellowiſh, or yellowiſh brown color. The internal veſicles which conſtitute the joints appear to be at firſt cylindrical, but at length collapſe into an oval form, ſo as to give the filaments when highly magnified, ſome reſemblance to a ſeries of guineas. The length of their joints is generally ſomewhat leſs than their diameter. *C. nummuloides*, although ſpecifically diſtinct, appears to poſſeſs ſome affinity with a ſpecies figured in the 4th Vol. of the Stockholm Tranſactions, under the name of *C. moniliformis.* The drawing in the ſupplementary plate B, repreſents the filaments when magnified with power 1.

26. *punctalis.* C. filis ſimplicibus, tenuiſſimis, longis, viridefcentibus; articulis diametro ſub-duplo longioribus, ſucco in globulum ſolitarium demum congeſto. T. 51.

27.* *Mucosa.* C. filis simplicibus, tenuissimis, lubricis, luteo virescentibus; articulis sub-torosis, longitudine diametrum æquantibus. T. *B.*

In stagnant Pools about Bantry. *Miss Hutchins.*

The gelatinous nature of this Confervæ makes it very difficult to investigate its real nature after it has been dried, in which state alone I have at present seen it. It is then scarcely distinguishable by the naked eye from *C. spiralis*, which it resembles both in its color, the mode of its growth, and the size of its filaments, though under a microscope the internal structure appears so widely dissimilar. There is however a strong peculiarity in it even in this state, that its excessively gelatinous texture prevents the filaments from cohering together, or even touching each other, and they lie quite distinct upon the paper. Miss Hutchins remarks that it has when recent a beautiful color. For the magnified drawing in my supplementary plate B, I am indebted to Mr. Hooker, but it was unavoidably made from a specimen which had been dried.

28.* *implexa.* C. filis simplicibus, crispato-implexis, tenuibus, mollibus, intensè lurido viridibus; articulis diametro sesquilongioribus. T. *B.*

On Rocks in the Sea near Bantry. *Miss Hutchins.*

This species is nearly allied to *C. tortuosa*, but the filaments are more entangled and slender, the texture less rigid, and the joints shorter. The drawing in plate B was made by Mr. Hooker, with power 1 of his microscope, from a specimen which had been dried.

29. *tortuosa.* C. filis simplicibus, rigidiusculis, crispatis, implicatis tenuibus intensè viridibus; articulis diametro driplo longioribus. T. 46.

30. *crispa.* C. filis simplicibus, rigidiusculis, crispatis, proliferis, laxè implicatis, crassiusculis, viridibus; articulis diametrô sub-triplo longioribus, siccitate alternatim compressis. T. *B.*

C. capillaris. *Sp. Plant.* p. 1636 (excl. Syn.) ROTH. *Fl. Germ.* III. pars. 1. p. 502. *Cat. Bot.* III. p. 261.

Prolifera crispa. VAUCHER. *Hist. des Conf. d'eau douce*, p. 130. t. 14. f. 2.

In a rapid ſtreamlet at Coſteſy, Norfolk. *W. J. Hooker, Eſq.*

Mr. Hooker, who alone has diſcovered this ſpecies in Britain, informs me that he has ſeen the filaments carried out by the current to the length of fifteen or twenty feet: their thickneſs is ſomewhat greater than that of *C. tortuoſa*, from which it may be at once diſtinguiſhed by its longer joints, as well as by the curious manner in which they become alternately compreſſed when the plant is dried without preſſure. Mr. Hooker has diſcovered lateral acuminated proceſſes iſſuing from the filaments, preciſely ſimilar to thoſe which Vaucher has figured on his *Prolifera criſpa*, and the plant in other reſpects ſo far accords with his deſcription, as to leave no doubt of the propriety of the above reference. He informs me that there is a ſpecimen of this ſpecies preſerved in the Linnæan Herbarium, with the name of *C. capillaris*, but Linnæus in his deſcription refers to the *Hiſtoria Muſcorum*, and it is certain that the ſpecies there figured is what I have repreſented at T. 9. I cannot therefore ſee the neceſſity for any alteration, which as that plant is now almoſt univerſally known by the name of *capillaris* would in my opinion only tend to confuſion. The drawing at plate B, for which I am indebted to the liberality of Mr. Hooker, repreſents *C. criſpa* magnified 2.

31. *capillaris.* C. filis ſimplicibus, rigidiuſculis, criſpatis, fragilibus, laxè implicatis, craſſis, viridibus; articulis diametrum longitudine vix æquantibus. T. 9.

β. minor. Filis triplo tenuioribus.

For reaſons given in the foregoing obſervations on *C. criſpa*, my former reference to the ſpecies Plantarum ſhould have been omitted. Mr. Hooker favored me with ſpecimens of what I have here arranged as a variety, which he diſcovered growing mixed with *C. criſpa*, far from the neighbourhood of the ſea, in the river at Helleſdon, near Norwich. The filaments are thrice more ſlender than thoſe of *C. capillaris*, which with its different place of growth, ſeems to indicate that it ſhould conſtitute a ſeparate

ſpecies, and I regret therefore that I am unable to diſcover any other diſtinctive mark whatſoever.

32. *ærea.* C. filis ſimplicibus, rigidis, ſtrictis, craſſis, praſinis; articulis diametro brevioribus, demum bipartitis. T. 80.

β. lubrica. Filis lubricis, mollibus.

C. ærea. Eng. Bot. t. 1929.

This curious variety, which was found on the Yarmouth Beach by Mr. Hooker, in the ſpring of 1808, attached to a piece of deal, differs ſo extraordinarily from the common appearance of *C. ærea*, that except under a microſcope nobody would ſuſpect them of being the ſame. It grew in a very large tuft, and its filaments were remarkably ſoft, tender, ſlippery and gloſſy, ſo as to float with the ſlighteſt agitation of the water and adhere cloſely to paper and glaſs in drying.

33.* *Melagonium.* C. filis ſimplicibus, rigidis, ſtrictis, craſſis, praſinis; articulis diametro ſub-triplo longioribus. T. *B.*

C. Melagonium. Weber and Mohr. *Reiſe durch Schweden*, p. 194, t. 3. f. 2. a. 6. Roth. *Cat. Bot.* III. p. 254.

In the Sea, near Newton Nottage, Glamorgan; *Mr. Young.* Near Bantry, not common; *Miſs Hutchins.* Once found on the ſhore near Swanſea.

The mode of growth, color and habit of this plant, which was firſt diſcovered on the coaſt of Sweden by Meſſrs. Weber and Mohr, are preciſely ſimilar to thoſe of *C. area*, from which it differs in the ſomewhat greater thickneſs of its filaments, and greater length of its joints. It was *C. melagonium* of which ſome years ago I found a ſingle filament on the ſhore near Swanſea, and which I then conſidered as a variety of *C. ærea*, and as ſuch it is mentioned in my deſcription of that ſpecies. The drawing at T. B. was made by Mr. Hooker from a dried ſpecimen, and repreſents the plant of its natural ſize, and alſo when magnified 3.

** *conjugatæ.* †

34. *nitida.* C. filis ſimplicibus, demum conjugatis, atro viridibus, ſplendenter lubricis; granulis in ſpiras plures, arctas, diſpoſitis; articulis diametrum longitudine ſub-æquantibus. T. 4. f. C.

C. nitida. *Fl. Dan.* t. 819, and *C. jugalis,* t. 883.

Conjugata princeps. VAUCHER. *Hiſt. des Conf. d'eau douce,* p. 64. t. 4.

35. *decimina.* C. filis ſimplicibus, demum conjugatis viridibus, ſplendenter lubricis; granulis in ſpiras duas laxas diſpoſitis; articulis diametro ſex-duplo longioribus.

C. decimina. MULLER in *Nova Acta Petrop.* III. p. 94. t. 2.

C. nitida. T. 4. f. A. B. and *C. jugalis,* T. 5.

C. ſetiformis β. ROTH. *Cat. Bot.* and *Fl. Germ.*

It will be immediately perceived that the ſpecific characters which ſeparate this ſpecies from the foregoing, lie in the different lengths of their joints, the very diſſimilar arrangement of their ſpires, and the dark almoſt black green of the one contraſted with the paler hue of the other. In both theſe ſpecies, Mr. Turner and myſelf have obſerved that the granules are ſometimes found, either from peculiarity of ſituation or from diſeaſe, ſcattered irregularly all over the joints, inſtead of preſerving their natural ſpiral diſpoſition; and in ſome individuals there are no traces of theſe whatever, though at the ſame time there is no appearance of their ever having been conjugated.

36. *longata.* C. filis ſimplicibus, demum conjugatis, flavo-virentibus, lubricis; granulis in ſpiram unicam laxam diſpoſitis; articulis diametro quadruplo longioribus.

† In this diviſion are compriſed the Confervæ referred by Vaucher to his genus *Conjugata,* a particularly natural and intereſting family, which I have deſcribed in my Introduction, p. 17. I am ſorry that I cannot follow this excellent Botaniſt in adopting all the ſpecies which he has deſcribed, but I have been led by my own obſervations to divide *C. nitida, C. ſpiralis,* and *C. bipunctata* each into two ſeparate ſpecies, in doing which I hope I have been correct, though I am far from feeling certain on the ſubject.

C. longata. VAUCHER. *Hiſt. des Conf. d'eau douce*, p. 71. t. 6. f. 1.

A part of the filaments repreſented in T. 3. f. A. belongs to this, and a part to the following ſpecies. The ſpires are ſometimes though rarely, double, but even in this ſtate it may be diſtinguiſhed from *C. decimina* by its more ſlender filaments and ſomewhat ſhorter joints. I have never ſeen a ſpecimen of *C. inflata* of Engliſh Botany, but am led by the deſcription and figure to ſuſpect that it is not diſtinct from this ſpecies.

37. *ſpiralis.* C. filis ſimplicibus, demum conjugatis, flavo-virentibus; granulis in ſpiram unicam compactam diſpoſitis; articulis diametro ſub-duplo longioribus. T. 3. f. C. and T. C.

C. porticalis. VAUCHER. *Hiſt. des Conf.* p. 66. t. 5. f. 1. (exc. Syn. Mulleri.)

Since the Introduction was printed, a curious ſpecimen of this ſpecies has been gathered by Mr. E. Horne, at Clapham, and examined by Mr. Woods, who gives the following account of it. "The plant is a pale dirty green nearly without gloſs, about the uſual ſize of *C. ſpiralis;* when magnified, the length of the joints is ſeen to be about equal to their width or a little more, and the ſpiral tube is in moſt parts nearly obliterated, but the chief ſingularity of this plant is in the connecting proceſſes which are uniformly at the ends, inſtead of as uſual in the middle of the joints; and each of which appears to unite with the proceſs of the next joint of the ſame filament. No indication of the conjugation of two filaments is to be obſerved; the dark globules appear only where the two joints are thus connected, and the adjacent one is uniformly empty.

38. *bipunctata.* C. filis ſimplicibus, demum conjugatis, viridi flaveſcentibus, lubricis; articulis bipunctatis, diametro ſub-ſeſqui longioribus. T. 2.

VAUCHER.

Mr. Hooker informs me that he has lately found this ſpecies, with the joints ſeparated like thoſe of *C. flocculoſa*, and that, when ſeparated, the joints became rounded at the corners, and the internal maſſes completely

ſpherical. Soon after my deſcription of this ſpecies went to preſs, Mr. Woods diſcovered it with the filaments conjugated.

39. *decuſſata.* C. filis ſimplicibus, demum conjugatis, luteſcentibus, lubricis; articulis bipunctatis diametro ſub-triplo longioribus.

C. decuſſata. VAUCHER. *Hiſt. des Conf.* p. 76. t. 7. f. 3.

This ſpecies is found in the ſame ſituations and is cloſely allied with *C. bipunctata*, but may be diſtinguiſhed by its more ſlender filaments, the ſmaller ſize of the ſpots, and the greater length of its joints.

40. *genuflexa.* C. filis ſimplicibus, demum hic illic genuflexis, conjugatiſque, fragilibus, flaveſcentibus lubricis; granulis in lineas horizontales coarcervatis. T. 6. and T. *C.*

The ſeed deſcribed in my Introduction, is repreſented in Plate C. magnified 1.

*** *anaſtomoſantes.*

41. *reticulata.* C. filis anaſtomoſantibus, reticulatis, in maculas ſub pentagonas coadunatis. T. 97.

C. articulis ſolutis.

42. *diſſiliens.* C. filis ſimplicibus, ſtrictis, fragilibus, lœtè viridibus; diſſepimentis plerumque ſolutis; articulis diametro dimidio breviſiribus. T. 63.

43. *pectinalis.* C. filis ſimplicibus, ſtrictis fragilibus, compreſſis cinereis, plerumque acuminatis; diſſepimentis ſœpe ſolutis; articulis diametro triplo brevioribus, medio pellucidis. T. 24.

Drs. Mohr and Weber, in their German tranſlations of this work, expreſs their opinion very decidedly in favor of uniting *C. pectinalis* and *C. flocculoſa*, but I muſt confeſs I have ſeen nothing to induce me to depart from my former ſentiments that they are quite diſtinct.

This and the following ſpecies of the ſame diviſion belong to the genus *Diatoma* of Decandolle, and are by means of *C. diſſiliens* united to the other Confervæ.

44.* *teniæformis.* C. filis ſimplicibus, compreſſis, dilutè viridibus; diſſepimentis ſolutis; articulis diametro dimidio brevioribus, obſoletè variegatis, demum refractis.

C. teniæformis. Eng. Bot. t. 1883.

On *Conferva fucoides* in the Sea at Beachy Head. *Mr. Borrer.*

45.* *ſtriatula.* C. filis ſimplicibus, compreſſis dilutè viridibus; diſſepimentis alternatim ſolutis; articulis diametro vix brevioribus, tranſverſim ſtriatis.

C. ſtriatula. Eng. Bot. t. 1928.

On Fuci and Confervæ in the Sea at Cromer; *Mr. Hooker.* At Brighton, *Mr. Borrer.*

46.* *Biddulphiana.* C. filis ſimplicibus, compreſſis, longitudinaliter ſtriatis, viridibus; diſſepimentis ſolutis; articulis quadratis, tranſverſim faſciatis, ſub-alternatim refractis.

C. Biddulphiana. Eng. Bot. t. 1762.

On Marine Algæ at Southampton. *Miſs Biddulph.*

This plant, which as well as the two former and *C. obliquata*, is here introduced upon the authority of Engliſh Botany, appears to be as Dr. Smith obſerves, really an extraordinary production, but it ſeems ſcarcely poſſible that all the figures in that plate ſhould belong to the ſame plant, or if they do, does it not lead to a ſuſpicion that the ſpecies of this family have been unneceſſarily multiplied by authors?

47. *flocculoſa.* C. filis ſub-ſimplicibus, compreſſis, faſcia longitudinali percurſis, cinereis; diſſepimentis ſolutis; articulis quadratis, tranſverſim ſtriatis, alternatim refractis. T. 28.

48.* *obliquata.* C. filis ramoſis, compreſſis, flexuoſis, fuſco albidis; diſſepimentis ſolutis; articulis quadratis, obliquis, tranſverſim faſciatis, maculatis, alternatim refractis.

C. obliquata. Eng. Bot. t. 1889.

On Fuci and Confervæ in the Sea. *Miſs Biddulph.*

C. articulatæ. filis ſetaceis.

a. *aveniæ.*

* *ſimplices.*

49. *flacca.* C. filis ſimplicibus, tenuibus, flaccidis, lœti viridibus; diſſepimentis pellucidis; articulis diametro pâullo brevioribus. T. 49.

C. penicilliformis. ROTH. *Cat. Bot.* III. p. 271?

50. *Youngana.* C. filis ſimplicibus, cœſpitoſis, flaccidis, obtuſis, lœtè viridibus; articulis utrinque contractis longitudine diametrum æquantibus. T. 102.

C. iſogona. Eng. Bot. t. 1930.

51. *curta.* C. filis ſimplicibus faſciculatis, ſub-cartilagineis, abbreviatis, utrinque alternatis, fuſco-olivaceis; diſſepimentis pellucidis; articulis diametro ſub-longioribus. T. 76.

52.* *flaccida.* C. filis ſimplicibus, faſciculatis, abbreviatis, flaccidis, baſi latioribus apicem verſus attenuatis olivaceo viridibus; articulis inferioribus diametro dimidio brevioribus, ultimis æquantibus. T. *C.*

On Fucus-fibroſus on Santon Sands, Devon. *Miſs Hill.*

This ſpecies appears to have been gathered only by Miſs Hill, who communicated it to Mr. Turner. It grows in ſmall tufts about half an inch long, and may be diſtinguiſhed from *C. curta* by its flaccid nature, and from *C. fucicola*, as well as all its other congeners, by the rather abrupt manner in which the joints of the upper part of the filament increaſe in length to double that of the lower part. Its ſubſtance is ſomewhat gelatinous, and in drying it adheres, though not very firmly, to either Glaſs or Paper. In the drawing at Plate C, for which I am indebted to Mr. Hooker, the plant is repreſented of the natural ſize, and when magnified with power 3, the upper and lower part of the filament are alſo ſeparately repreſented, magnified 2.

53. *fucicola.* C. filis ſimplicibus, faſciculatis, breviuſculis, obtuſis, ferrugineis; diſſepimentis pellucidis; articulis diametro duplo-longioribus. T. 66.

54. *carnea.* C. filis ſimplicibus, tenuibus, abbreviatis, carneis; articulis toroſis, diametro ſub-triplo longioribus; ſucco in globulum ſolitarium congeſto. T. 84.

55. *ericetorum.* C. filis ſimplicibus, procumbentibus, implexis, fuſco-violaceis; articulis diametro duplo longioribus, demum ſub-ovalibus. T. 1.

Dr. Roth in the laſt volume of his *Catalecta Botanica*, has deſcribed this ſpecies as branched, but I have never ſeen it ſo.

56. *fuſco-purpurea.* C. filis ſimplicibus, ætate inæqualiter toroſis, fuſco-purpureis; articulis diametro dimidio brevioribus, demum ſerie globulorum cinctis. T. 92.

57.* *atro-purpurea.* C. filis ſimplicibus, ætate inæqualiter toroſis, atro purpureis; articulis diametro dimidio brevioribus, demum ſerie duplici globulorum cinctis. T. 103.

Since the publication of this plant, ſpecimens have been found on the Coast of Cornwall by Mr. W. Raſhleigh, and communicated by him to Mr. Turner.

** *ramoſæ.*

58. *feneſtralis.* C. filis ramoſiſſimis, repentibus, minutiſſimis, centrifugis, albidis; ramis plerumque divaricatis; diſſepimentis ſub-obſoletis. T. 94.

59.* *nivea.* C. filis ramoſis, tenuiſſimis, rigidiuſculis, niveis; ramis in verticello confertis; articulis diametrum longitudine ſub-æquantibus. T. *C.*

Byſſus lanuginoſa. WILLAN, *Obſ. on Sulphureous Waters.* p. 10.

In Sulphur Springs. At Croft, Yorkſhire, and Dinſdale, Durham; *Dr. Willan.* At Middleton One Row, near Darlington; *Mr. Backhouſe.*

Although I have not ſeen any other ſpecimens of *C. nivea*, than thoſe which I received from Darlington, yet from Dr. Willan's deſcription there can be no doubt that it is the plant which he has deſcribed. Dr. Willan ſays it is a remarkable circumſtance that this ſpecies is found below the ſpring, no further than the water retains the ſenſible ſulphureous qualities, as if the hepatic gas was neceſſary to its production and nouriſhment.

It grows on roots and other ſubſtances, which it covers with white filaments two or three lines in length, and ſo extremely ſlender, that under the higheſt power of my microſcope, their thickneſs ſcarcely appears equal to that of horſe-hair. Some of the filaments are ſimple, but moſt of them are ſingularly beſet towards the middle with a whirl-like cluſter of very numerous ſimple branches reſembling proliferous ſhoots. Diſſepiments with a very high power are clearly diſcernable, and they divide the filaments into joints, the length and thickneſs of which are about equal. The drawing at table C, for which I am indebted to my friend Joſeph Woods, repreſents the plant of the natural ſize and when magnified 2. A fragment is alſo added (on a rather larger ſcale than it appeared with the higheſt power) to ſhew the joints.

60. *ochracea.* C. filis ramoſiſſimis, tenuiſſimis, perfragilibus, denſiſſimè compactis, gelatinam ochraceam tamen in floccos ſecedentem conſtituentibus, diſſepimentis ſub-obſoletis. T. 62.

61. *lactea.* C. filis ramoſis in maſſam informem gelatinoſam confertis, hyalinis, ſordidé lacteis; ramis e quovis diſſepimento; articulis longiſſimis. T. 79.

62. *typhloderma.* C. filis ſub-ramoſis in pelliculam olivaceam denſiſſimé implexis; articulis longitudine diametrum æquantibus. T. 83.

63. *ſanguinea.* C. filis ramoſis in pelliculam gelatinoſam ſanguineam, denſiſſimè implexis; ramis divaricatis; articulis diametro ſeſquilongioribus.

Mr. Young diſcovered the preſent ſpecies, forming a denſely matted membrane on the ſurface of ſome Iſinglaſs ſize, in which he had put a quantity of patent yellow to diſſolve, but we have ſince repeatedly endeavored to produce it in the ſame manner without ſucceſs. Its dark crimſon color is of itſelf ſufficient to diſtinguiſh it from its congeners.

64. *palliida.* C. filis dichotomis, curvato-flexuoſis, faſtigiatis, in pelliculam gelatinoſa-coriaceam implexis, pallidè ochraceis; dichotomarum angulis rotundatis; articulis longiſſimis. T. 78.

65.* *arachnoidea.* C. filis ramofis, tenuibus, in membranam arachnoideam laxè implicatis, pallidè flavefcentibus; ramis fparfis, remotis, fimplicibus; articulis longitudine variantibus, diametrum fub-quadruplo fuperantibus. T. *C.*

On decayed Trees in the Wood at Croftwick near Norwich. *Mr. Hooker.*

I cannot find that this fpecies has been noticed either as a Conferva or Byffus, in which latter genus it would have been moft probably arranged by the older authors. It forms a fine fpider-like web on decaying wood of a light yellow color. The filaments are branched, extremely flender, flaccid, and loofely entangled: the branches are fimple, remote and difpofed without apparent order: the diffepiments are of a dark color, and divide the filaments into joints, whofe length, though variable, is moft ufually about four times greater than the diameter. I am not aware of its having been found by any other Botanift than Mr. Hooker, and to him I am indebted for the drawing of plate C, which reprefents the plant of its natural fize, and alfo when magnified with powers 2 and 1 of his microfcope.

66. *rubiginofa.* C. filis ramofiffimis, rigidis, erectiufculis, rubiginofis; in maffam fub-folidam implexis; articulis diametro fub-quadruplo longioribus. T. 68.

67. *phofphorea.* C. filis ramofis, adfcendentibus, breviffimis, in cruftam uniformem denfiffimè implexis, violaceis; articulis diametro fub-fefqui longioribus. T. 88.

68. *purpurea.* C. filis dichotomis cœfpitofis, implexis, minutiffimis, faftigiatis, purpureis; dichotomis approximatis; articulis diametro fub-duplo longioribus. T. 43.

69.* *lichenicola.* C. filis ramofis cœfpitofis, abbreviatis, aureis, ficcitate demum cinereis; ramis longis alternis; articulis torofis, diametro fub-duplo longioribus.

C. lichenicola. Eng. Bot. t. 1609.

On Lichens. In the New Foreſt; *Mr. Lyell.* About Belfaſt; *Mr. Templeton.* In Houghton and St. Leonard's Foreſt, Suſſex; *Mr. Borrer.*

This ſpecies is nearly related to *C. aurea*, from which ſome of the filaments ſeem ſcarcely to differ, except in their ſmaller ſize.

70. *aurea.* C. filis ramoſis cœſpitoſis, abbreviatis, aureis ſiccitate demum cinereis; ramis longis patentibus rigidiuſculis, ſub-incurvis; articulis cylindraceis, diametro ſeſquilongioribus. T. 35 and T. *C.*

Since the publication of my deſcription of *C. aurea* I have diſcovered it with capſules, which are repreſented in the ſupplementary Plate C. magnified 1. *C. ilicicola* of Engliſh Botany does not appear to me at all diſtinct from this ſpecies, and I have been favored by Mr. Templeton with ſome ſpecimens gathered on the trunks of Quercus Ilex, in Lord Dungannon's Park, near Belvoir, in Ireland, with capſules preciſely reſembling thoſe of *C. aurea.*

71.* *olivacea.* C. filis ramoſis, erectis, cœſpitoſis, implexis, abbreviatis, rigidiuſculis, fuſco olivaceis; ramis ſubſimplicibus, alternis, obtuſis; articulis longitudine diametrum æquantibus. T. *C.*

On Marine Rocks in Papa Weſtra, Orknies. *Mr. Borrer* and *Mr. Hooker.*

I am indebted to Mr. Borrer for ſpecimens of this hitherto nondeſcript ſpecies, which, in company with Mr. Hooker, he diſcovered during their late tour through Scotland. The filaments of a browniſh olive color, are not more than a quarter of an inch in length, and grow ſo matted together as to form a minute turf on the rocks. It may be diſtinguiſhed from *C. radicans*, to which it ſeems moſt nearly allied, by its different mode of growth, ſhorter filaments and longer joints. The drawing was made by Mr. Hooker from a dried ſpecimen, and repreſents a filament when magnified with powers 3, 2 and 1 of his microſcope.

72.* *radicans.* C. filis ramoſis hic illic radicantibus, ſtrictis, rigidiuſculis, fuſco olivaceis; ramis ſimplicibus, ſparſis, erectis, obtuſis, baſi attenuatis; articulis diametro ſub-dimidio brevioribus. T. *C.*

On ſandy Banks among the Rocks in Bantry Bay; *Miſs Hutchins.* Rocks at Hartlepool; *Mr. Backhouſe.*

Miſs Hutchins firſt diſcovered this ſpecies of Conferva in the neighbourhood of Bantry, and the preſent deſcription is made from a drawing and ſpecimens which ſhe ſent to Mr. Turner. The filaments grow to the length of about half an inch, and according to Miſs Hutchin's obſervations throw out fibrous roots towards their baſe. The color is of a brownifh olive: the branches, which are erect and diſpoſed without order, are uniformly ſimple with obtuſe apices. The joints are about equal to half of the diameter. The fructification is in capſules which are moſtly ſeſſile, numerous, and diſpoſed on the filaments without order. The ſubſtance is rather ſtiff and not in the leaſt gelatinous, ſo that in drying it adheres to neither glaſs nor paper. The drawing at plate *C* was made by Miſs Hutchins from the recent plant, and repreſents it both of its natural ſize and when magnified 3, to which Mr. Hooker, from a dried ſpecimen, has added a piece of a filament magnified 1.

73. *Brownii.* C. filis ramoſis, densè cœſpitoſis, rigidiuſculis, abbreviatis, viridibus; ramis ramuliſque ſub-ſecundis; articulis apice plerumque incraſſatis, diametro ſub-quintuplo longioribus. T. *D.*

On Wet Rocks in a Cave near Dunrea, Ireland. *Mr. Robert Brown.*

This plant I introduce entirely on the authority of Mr. Brown, who conſiders it as a diſtinct ſpecies, and to whoſe judgment in all matters relating to Botany, the greateſt deference is due. He alone has obſerved it, and I have a pleaſure in publiſhing it with his name. The following deſcription was made by Mr. Brown from recent ſpecimens. "In cœſpitibus denſis nunc convexis nunc planiuſculis latioribuſque. Filamenta (quaſi faſciculata) erecta, ramoſiſſima, $1\frac{1}{2}$ ad 2 lineas longa, craſſiuſcula, rigidula; ramis ſub-ſecundis, dichotomi; articulis multoties longioribus quam latis, pluribus apicem verſus ſenſim incraſſatis, paucis cylindricis. Fructificatio nulla viſa." The ramifications and joints are ſo nearly ſimilar to thoſe of *C.*

ægagropila that I apprehend it can only be diſtinguiſhed from that ſpecies by its very different mode of growth. For the drawing which repreſents *C. Brownii* of the natural ſize, and when magnified 3 and 1, I am indebted to the kindneſs of my friend Joſeph Woods.

74.* *cryptarum.* C. filis dichotomo-ramoſis, repentibus, viridibus; ramis divaricatis acuminatis, articulis diametro ſub-triplo longioribus. T. *D.*

In Caves. North of Ireland; *Mr. R. Brown.* In the firſt Cave on the Cave Hill near Belfaſt, growing among *Hypnum tenellum; Mr. Templeton.* In Caves by the Sea-ſide near Bantry; *Miſs Hutchins.*

Mr. R. Brown, who firſt diſcovered this plant ſeveral years ago, favored me with a ſpecimen under the preſent name. It is of about the ſize of *C. velutina*, but its mode of ramification is widely different. The magnified drawing at plate C was made from a dried ſpecimen by *Mr. Hooker.*

75. *velutina.* C. filis ramoſis, repentibus, abbreviatis, pulvinatis, implexis, lœtè viridibus; ramis erectis obtuſis; articulis diametro multuplo longioribus. T. 77.

76. *umbroſa.* C. filis ramoſis repentibus, abbreviatis, fragilibus, nigro viridibus; ramis curvis, ſimplicibus, ſub ſecundis, obtuſis, articulis cylindraceis inflatiſque longitudine variantibus. T. 61.

77. *multicapſularis.* C. filis ramoſis, repentibus, nigro-olivaceis; ramis erectis, ſimpliciuſculis, brevibus, apicem verſus incraſſatis & capſuliferis; capſulis congeſtis, articulis longitudine variantibus. T. 71 and T. *D.*

At Plate *D* is repreſented an extraordinary appearance of this ſpecies, which I have obſerved ſince my deſcription was publiſhed in a ſpecimen gathered near Swanſea. The drawing was made by *Mr. Young.*

78. *pulveria.* C. filis dichotomo-ramoſis, repentibus, minutiſſimis, apice capſuliferis, æruginoſis; diſſepimentis ſub-obſoletis, articulis diametro triplo longioribus. T. *D.*

Byſſus æruginoſa. Fl. Ang. p. 605. *Withering.* IV. p. 143.

On the Stems of dead Fern; *Col. in Dillenius.* On rotten Wood;

Hudſon. On the Pillars of Roſlyn Chapel near Edinburgh; *Dr. Smith.* On the Ruins of the Chapter Houſe at Margam, and the Walls of Oyſtermouth Caſtle, Glamorgan; *Mr. Young.*

This ſpecies, for the diſcovery of which I am indebted to Mr. Young, ſo nearly accords with the deſcription in the Hiſtoria Muſcorum, that I feel no heſitation in publiſhing it as the *Byſſus æruginoſa* of Hudſon. It is an extremely minute ſpecies, of a bluiſh green color, and rather powdery appearance. When examined with the higheſt powers of the microſcope, the filaments are ſeen to be twice or thrice dichotomous, and diſſepiments may be here and there obſerved, dividing them into joints, whoſe length is about equal to three times their diameter. Mr. Young remarked that the branches are ſometimes ſingularly reflected. On the termination of each branch there are generally two oval bodies of a dark green color, which I ſuppoſe are either capſules or naked ſeeds, but they are ſo minute that it is impoſſible to ſpeak with any certainty of their nature, and it is theſe which give the plant its powdery appearance.

The drawing at Plate D was made by Mr. Young, and repreſents the plant both of its natural ſize and when magnified with the higheſt power of a compound microſcope.

79. *ebenea.* C. filis ramoſis, erectis, abbreviatis, cartilagineis, nigris; ramis ramuliſque obtuſis; articulis diametrum longitudine æquantibus. T. 101.

80. *atro-virens.* C. filis ramoſis, rigidiuſculis, atro-virentibus; ramis ſubſecundis utrinque attenuatis; articulis breviſſimis tripunctatis. T. 25 and T. D.

Lichen exilis. AUCTORUM.

The fructification of this ſpecies, which I diſcovered on ſome ſpecimens gathered near Beddgellart, is repreſented at plate D magnified 1.

81.* *ocellata.* C. filis ramoſis, flaccidis, intra moniliformibus, fuſceſcentibus; ramis ſub-ſecundis, remotis elongatis, ſimplicibus; articulis diametro dimidio brevioribus, centro ſæpè notatis. T. *D.*

On a Bog on Town Hill Common, near Southampton. *Joſeph Woods, Junr. Eſq.*

I am obliged to Mr. Woods for the ſketch and ſpecimens from which I have taken this deſcription, and which are the only ones I have ever ſeen of this ſingular ſpecies. The filaments do not appear to poſſeſs any real diſſepiments, but a chain of bead-like globoſe veſicles, conſiderably narrower than themſelves paſs through them, in the center of moſt of which another concentric veſicle may be obſerved. The filaments ſometimes, like thoſe of *C. atro virens*, are not of the ſame thickneſs thoughout, and with this ſpecies *C. ocellata*, though extremely different, ſeems to poſſeſs moſt affinity. The color to the naked eye is brown, but under the microſcope, when examined with a ſtrong light, appears almoſt of an orange hue. The figure at plate D repreſents the plant as it appears when magnified with powers 2 and 1.

82. *caſtanea.* C. filis ramoſis, repentibus, pinnatis, acuminatis, caſtaneis; pinnis pinnuliſque alternis, divaricatis; articulis caulis longiſſimis, pinnarum brevioribus. T. 72.

Mr. Turner is of opinion that this is the *C. muſcicola* of the German authors, but it does not well accord with the figure in Weber and Mohr's *Reiſe durch Schweden*, or Dr. Roth's deſcription in the Catalecta Botanica.

83. *Acharii.* C. filis ramoſis, cœſpitoſis, rigidiuſculis, ſub-erectis, fuſco-olivaceis; ramis brevibus, patentibus, apicibus obtuſis; articulis diametro ſubduplo longioribus. T. 89.

84. *orthotrici.* C. filis ramoſis, cœſpitoſis, pulvinatis, rigidiuſculis, fragilibus, obtuſis, caſtaneis; ramis ſub-alternis; articulis diametro vix longioribus. T. 89.

85. *chalybea.* C. filis ramoſis, pulvinatis, faſtigiatis, ſtrictis, tenuibus, erectis, nigro-viridibus; ramis ſub-alternatim ſecundis; ramulis lateralibus, breviſſimis, multifidis, capſuliferiſque; articulis diametro quintuplo longioribus. T. 91.

C. corymbifera. *Eng. Bot.* t. 1996.

Since this plant was deſcribed in my work, Mr. Backhouſe has found ſome ſpecimens of it near Darlington, as large as thoſe ſent by Dr. Roth to Mr. Turner, and exactly agreeing with them, (as well as with thoſe from Mr. Borrer, excepting only in the greater length of their filaments). Upon theſe the fructification was firſt diſcovered, which is ſo remarkable and ſingular that Dr. Smith was miſled by it to regard Mr. Backhouſe's plant as a new ſpecies, and to publiſh it as above quoted in Engliſh Botany.

86. *vivipara.* C. filis dichotomo ramoſis, flexuoſis flavo virentibus; ramis ad diſſepimenta bubbiferi; bulbis piliferis; articulis diametro triplo longioribus. T. 59.

C. ſetigera. ROTH. *Cat. Bot.* III. p. 283. t. 8. f. 1.

Since I publiſhed the deſcription of this ſpecies it has been found in the neighbourhood of Darlington by Mr. Backhouſe.

87.* *exigua.* C. filis ramoſiſſimis, minutis, gelatinoſis, viridibus; ramis confertis; ramulis elongatis apice pellucidis; articulis diametrum longitudine ſub-æquantibus. T. *D.*

In the Chalybeate Stream which runs through the Bog on Apſe Heath, near Shanklin, Iſle of Wight. *J. Woods, junr. Eſq.*

I received a ſpecimen and drawing of this minute and beautiful ſpecies from my friend Mr. Woods, who informs me that its length is not greater than three ſixteenths of an inch. The length of the joints in the principal branches ſomewhat exceeds the diameter, but thoſe of the ramuli are ſhorter. This ſpecies ſeems nearly related to the *Rivulariæ.*

88. *protenſa.* C. filis ramoſis, lubricis, viridibus; ramis diffuſis, maximè elongatis, apice pellucidis; articulis diametro ſub-ſeſquilongioribus. T. 67.

89. *lubrica.* C. filis ramoſiſſimis, lubricis, viridibus; ramulis ſparſis, approximatis, aculeiformibus; articulis diametro ſaltem triplo longioribus. T. 57.

90. *mutabilis*. C. filis ramosissimis, submoniliformibus, gelatinosis, viridibus; ramulis fasciculatis, multifidis, penicilliformibus, apice protensis; articulis diametro sesquilongioribus. T. 12.

91. *gelatinosa*. C. filis ramosissimis, moniliformibus, gelatinosis, obscurè viridibus; ramulis subverticillatis, multifidis, penicilliformibus; articulis ramulorum longitudine diametrum sub æquantibus. T. 32.

Since I published my description of this species, I have discovered the blue variety in Llyn Cwellyn, and examined it carefully on the spot with a compound microscope. The principal stems were entirely destitute of whirls, but the ends precisely resembled those of the plant in its common state, the color alone excepted. I am inclined to think that the singular appearance of this variety arises from disease, probably occasioned by its alpine situation, and its growth in stagnant water, but at all events it has no claim whatever to be considered a distinct species.

92. *atra*. C. filis ramosissimis, moniliformibus, sub-gelatinosis, atro-viridibus; ramulis setaceis; articulis diametro quintuplo longioribus, supernè incrassatis, verticillato-ciliatis. T. 11 and T. *D*.

Since the publication of this species it has also been found at Bantry by Miss Hutchins, and near Cambridge by Mr. Relhan, who first discovered the fructification, which has been subsequently found about Yarmouth by Mr. Turner and Mr. Hooker. The fruit is large, globular, and sessile, of a dark color, and scattered plentifully over the frond, especially near the base, in which respect it differs from most other Confervæ. Although the powers of my microscope did not enable me satisfactorily to determine, yet I have but little doubt that these capsules resemble in their nature those of *C. gelatinosa;* they are represented in my supplementary plate *D* magnified 1.

93.* *nigricans*. C. filis dichotomis, rigidiusculis, viridi-nigricantibus; ramis longis, remotis, patentibus; articulis diametro quadruplo longioribus. T. *E*.

C. nigricans. ROTH. *Cat. Bot*. III. p. 277.

In a pond at Wimbledon, Surry. *Mr. Dickſon.*

Mr. Dickſon alone appears to have diſcovered this ſpecies in Britain, and to him I am indebted for the ſpecimens now before me, which having been ſent by Mr. Turner to Dr. Roth were returned with the name of *C. nigricans.* The filaments grow to the length of three or four inches, and are irregularly divided by patent dichotomies. The joints, whoſe length is about four times greater than the diameter, are by Dr. Roth deſcribed "ſporulis ubique ſparſis," and in the ſpecimen now before me moſt of them are covered by dark colored ſpots, which however ſeem rather to proceed from decay or ſome extraneous matter attached to them. In drying it will not in the leaſt adhere to either Glaſs or Paper. In Plate E the plant is repreſented when magnified 4 and 2, and I am indebted to my friend Mr. Hooker for the drawing, which was neceſſarily made from a ſpecimen that had been previouſly dried.

94. *criſpata.* C. filis ramoſis, criſpatis, ſaturatè viridibus; ramis alternis, remotiſſimis; articulis diametro multuplo longioribus, ſiccitate alternatim compreſſis. T. 93.

95. *pennatula.* C. filis ramoſiſſimis, flaveſcentibus; ramis ramuliſque erecto-patentibus, ſub-incurvis; articulis cylindraceis diametro ſextuplo longioribus.

C. pennatula. Fl. Dan. t. 945.

Ditches about Yarmouth.

Of this plant I have now no ſpecimens, but a drawing made by myſelf in 1802, from ſome individuals gathered near Yarmouth, ſo exactly accords with the figure in the *Flora Danica,* that I am led to admit it as a Britiſh Conferva, though chiefly for the purpoſe of directing the attention of other Botaniſts to the ſubject, and without by any means pledging myſelf for its being a diſtinct ſpecies.

96.* *flaveſcens.* C. filis ramoſiſſimis, flexuoſis flavo virentibus; ramis ſub-dichotomis; patento-horizontalibus; ramulis lateralibus abbreviatis; articulis cylindraceis diametro decuplo longioribus. T. *E.*

C. flavescens. ROTH. *Cat. Bot.* II. p. 224. III. p. 241. *Fl. Germ.* III. parf. 1. p. 511.

In the Ditches at Cley, Norfolk; *Mr. Hooker.* In the New River at Stoke Newington; *Mr. Woods.*

This ſpecies, though nearly allied to *C. fracta*, is diſtinguiſhable by its more ſlender filaments and by its longer joints. The drawing at plate D was made by Mr. Hooker, and repreſents the plant magnified 3 and 2.

97. *fracta.* C. filis ramoſiſſimis flexuoſis viridibus; ramis ramuliſque divaricatis ſub-alternis; articulis diametro quintuplo longioribus demum oblongis. T. 14.

This is a very variable ſpecies, ſo much ſo that in particular ſituations it approaches ſo cloſely both to the preceding and following one as to require ſometimes great care to diſtinguiſh them. It has been already noticed in the Introduction that it is the *C. vagabunda* of Hudſon.

98. *flexuoſa.* C. filis dichotomo-ramoſis, rigidiuſculis, ſaturatè viridibus; ramis flexuoſis; ramulis ſub-ſimplicibus, tenuiſſimis, alternatim ſecundis, patentibus, articulis diametro duplo longioribus. T. 10.

99.* *Hutchinſia.* C. filis ramoſiſſimis, flexuoſis, ſub-cartilageneis, fragilibus, glauco viridibus; ramis ramuliſque ſparſis, ultimis ſecundis adpreſſis; articulis toroloſis, diametro duplo longioribus. T. 109.

100. *diffuſa.* C. filis dichotoma-ramoſis, flexuoſis, rigidis, viridibus; ramis diffuſis remotis; ramulis brevibus approximatis, obtuſis; articulis cylindraceis, diametro quadruplo longioribus. T. 21.

101. *rupeſtris.* C. filis ramoſiſſimis, ſtrictis, virgatis, faſciculatis, intensè viridibus; ramis adpreſſis, obtuſis; articulis cylindraceis, diametro ſub-quadruplo longioribus. T. 23.

102. *glomerata.* C. filis ramoſiſſimis, rigidiuſculis, viridibus; ramis alternis; ramulis brevibus, ſecundis, ſub faſtigiatis, penicilliformibus, obtuſiuſculis; articulis diametro quadruplo longioribus. T. 13.

103. *lætè-virens.* C. filis ramosissimis, rigidiusculis, arcuatis, lætè viridibus; ramis approximatis, acuminatis; ramulis brevibus, alternatim secundis; articulis diametro sub-triplo longioribus. T. 48.

104.* *albida.* C. filis ramosissimis, coacervatis, tenuibus, albo-virescentibus; ramis subquaternis approximatis; ramulis horizontalibus, oppositis, flexuosis, ultimis sub-secundis; articulis diametro quadruplo longioribus. T. *E.*

C. albida. Fl. Ang. p. 595. WITHERING. IV. p. 131.

C. marina tomentosa, tenerior, & albicans. DILL. *Hist. Musc.* p. 19. t. 3. f. 12.

β. protensa. Filis in longum protensis; ramulis patentibus, strictis.

In the Sea at Cromer; *Mr. Turner.* *β.* Coast of Sussex; *Mr. Borrer.* In Bantry Bay, not uncommon during the months of June and July; *Miss Hutchins.*

By means of a fragment of the Dillenian specimen No. 12, I have been enabled to satisfy myself that the present is the same species, and consequently the *C. albida* of Hudson. I have at present seen only two dried specimens of this plant, the habit of which is so remarkably thick and clustered that it is extremely difficult to extricate a small piece so as clearly to discover the ramification. Its strongest character seems to lie in the opposite and horizontal ramuli. The color is a pale waxy yellowish green, wholly devoid of gloss. The length of the filaments is about three inches. The variety *β* is seven or eight inches long, and of a less bushy habit. Its ramuli are less regularly opposite, and are strait instead of being flexuose. Miss Hutchins says that when fresh it is of a beautiful pale green color. For the sketch at Plate E, which represents the ramuli magnified 2, I am indebted to Mr. Hooker.

105. *pellucida.* C. filis ramosissimis, strictis, rigidis, dilutè viridibus; ramis plerumque ternis, obtusis; articulis longissimis. T. 90.

106. *ægagropila.* C. filis ramosissimis, viridibus, e centro progredientibus, et globum constituentibus; ramis ramulisque sub-secundis, obtusis; articulis diametro quadruplo longioribus. T. 87.

107.* *æruginosa.* C. filis ramosis, flexuosis, brevibus, æruginosis; ramis sparsis, patentibus, obtusis; articulis diametro sub-sesquilongioribus. T. *E.*

C. æruginosa. Fl. Ang. p. 595. WITH. IV. p. 131.

C. marina capillacea brevis, viridissima mollis. DILL. *Hist. Musc.* t. 4. f. 20.

On Fuci.

The sketch of this Conferva represented in the supplementary Plate E, as also the above description, is taken from the original specimen in the Dillenian Herbarium, and is published because I have seen no other British specimen that resembles it. I have neither gathered it myself, nor ever seen it in any other collection. It is from half to three-quarters of an inch in length. The drawing represents a filament magnified 1.

108.* *arcta.* C. filis ramosis, strictis, virgatis, cœruleo-viridibus; ramis subpatentibus, ultimis sparsis adpressis; articulis inferioribus, brevibus, superioribus, longissimis. T. *E.*

In the Sea, Bantry Bay. *Miss Hutchins.*

My friend Mr. Turner favored me with specimens of this species, which he received from Miss Hutchins, to whom the botanical world is indebted for its discovery. It grows to the length of two or three inches, and is of a light bluish green color. The filaments are about twice divided: the branches issue at acute angles and at uncertain distances from each other; they are most commonly alternate but sometimes opposite, and a few of those near the root, in the specimen now before me, contrary to their general character, are curled inwards in a remarkable manner. The length of the joints varies; in the lower part of the filament it scarcely exceeds the diameter, but becomes longer towards the summit, and the terminal joints are remarkably long. When dried, in which state alone I have hitherto had an opportunity of observing it, it has a flaccid Ulva like appearance. For the drawing at Plate E, I am indebted to Mr. Hooker: the plant is represented magnified 4, and also the lower and upper end of a filament, separately, magnified 2.

109.* *lanosa.* C. filis ramosis, brevibus, tenuibus, luteo-virescentibus; ramis sparsis; articulis inferioribus sub-duplo, ultimis multuplo diametro longioribus. T. *E.*

C. lanosa. ROTH. *Cat. Bot.* III. p. 291.

β. Zosteræ. Filis lætè viridibus, splendentibus.

On Rocks and Algæ in the Sea. Near Forres; *Mr. Brodie.* At Cromer; *Mr. Hooker.* Anglesea; *Rev. H. Davies.* At Brighton; *Mr. Borrer.* At Ilfracombe; *Miss Hill.* Bantry Bay; *Miss Hutchins.* Between Dover and the South Foreland. *β.* On Zosteræ at Worthing; *Mr. Borrer.* On Marine Algæ, near Forres; *Mr. Brodie.*

That this species is the *C. lanosa* of Roth, I have been enabled to prove by means of authentic specimens in Mr. Turner's extensive Herbarium. I discovered it several years ago in the neighbourhood of Dover, and have since received specimens from several of my friends. The filaments are mostly about four lines, and I believe they never exceed an inch in length. The color is generally of a very dull yellowish green, wholly destitute of gloss when dry. The joints vary in length, some of those in the lower part of the filament being about equal to, and others double the diameter, but those at the terminations of the filaments are uniformly much longer than any of those below them. Mr. Hooker in the specimens which he gathered at Cromer, observed two small dark colored spots in many of the joints, but this appearance they lose in drying. The var. *β.* was sent me by Mr. Borrer, who found it on the Sussex coast growing on Zostera marina, and I have also received it from Mr. Brodie: it is of a grass-green color and is glossy, but though on this account widely different at first sight, it does not appear to be distinct from the present species. Mr. Turner has received both of these from Miss Hutchins as the same. The drawing at plate E was made by Mr. Hooker from a recent specimen, and represents the plant magnified 3, and also separately the upper and lower parts of a filament magnified 1.

110. *tomentosa.* C. filis ramosissimis, tenuibus, funis in formam densissimè contortis, sub-ferrugineis; ramis divaricatis, ultimis simplicibus; articulis diametro quadruplo longioribus. T. 56.

111.* *riparia.* C. filis infernè simpliciusculis, supernè ramosis, longis tenuibus, implexis flavo-virentibus; ramis remotis, divaricatis; articulis diametro sub duplo longioribus. T. *E.*

C. riparia. Roth. *Cat. Bot.* III. p. 216.

Near Bantry; *Miss Hutchins.* In Salt pools by the Yare, near Yarmouth.

It is on the authority of authentic specimens in Mr. Turner's Herbarium, which I have compared with those sent by Miss Hutchins, that I publish this species with the reference to Roth, upon whose description I have been under the necessity of relying for a part of my own, the filaments being so long and entangled that in a dried specimen it is almost impossible to separate them. I have a sketch which belongs to the same species, and which I made from a plant that I discovered in pools by the side of the Yare, near Yarmouth, in 1802. The filaments towards the root have but few branches, but they are more numerous towards the summits, and always remarkably divaricated. The drawing at T. *E.* was made by Mr. Hooker from a dried specimen, and represents, separately, the ramification and nature of the joints, magnified with powers 2 and 1 of his microscope.

112.* *siliculosa.* C. filis ramosissimis, tenuibus, fusco-flavescentibus; ramis ramulisque sub alternis, acuminatis; articulis diametrum longitudine æquantibus; capsulis siliculiformibus. T. *E.*

Ceramium confervoides. Roth. *Cat. Bot.* I. p. 151. t. 8. f. 3. III. p. 148. *Fl. Germ.* III. pars I. p. 467.

Rocks in the Sea at Cromer and Hastings. *W. J. Hooker, Esq.*

Dr. Roth and my friend Mr. Hooker are of opinion that *C. siliculosa* is specifically distinct from *C. littoralis*, to which I have thought it right to accede, never having myself had the opportunity of comparing recent

ſpecimens of the two plants together. The principal difference which I can diſcover, conſiſts in the lanceolate pods of the one, contraſted with the globular capſules of the other, but this however I can hardly admit to be a ſufficient indication of ſpecific difference, ſince the ſame may be obſerved between *C. coccinea* and its variety, in *C. arbuſcula*, and ſeveral other Confervæ, each of which ſhould in that caſe be divided into two ſpecies. The drawing at Plate E was made by Mr. Hooker from the recent plant, and repreſents the filaments magnified 3 and 1.

113. *littoralis*. C. filis ramoſiſſimis, tenuibus, implexis, olivaceis; ramis ramuliſque ſub-alternis, acuminatis; articulis diametrum longitudine æquantibus; capſulis globoſis. T. 31.

It appears from the third faſciculus of the Catalecta Botanica, that Dr. Roth's *Ceramium tomentoſum* belongs to the preſent ſpecies, and is quite different from *C. tomentoſa* of Hudſon, to which I had erroneouſly referred it. The latter is probably *Ceramium compactum* of Roth.

114. *fœtida*. C. filis ramoſis, coadunatis, virgatis, apicibus liberis, olivaceis; ramis confertis; articulis diametro ſeſqui longioribus, granula elliptica includentibus. T.

115.* *paradoxa*. C. filis ramoſis coadunatis, tenuiſſimis, lubricis, dilutè viridibus; ramis longis ſparſis, adpreſſis; articulis diametrum longitudine æquantibus, granula ſphærica includentibus. T. *F*.

In the Sea at Bangor; *Mr. Templeton*. Beach at Brighton; *Mr. Borrer*.

A ſpecimen from Mr. Templeton in Mr. Turner's Herbarium, proves that he was the firſt diſcoverer of this moſt extraordinary ſpecies. It has alſo been gathered on the Suſſex coaſt by Mr. Borrer, and it is through his aſſiſtance that I am enabled to offer the following obſervations reſpecting it. It grows in cloſe tufts four or five inches long; the color of my dried ſpecimens is light green, but in the place of growth it is probably different, as Mr. Borrer in thoſe which he picked up on the beach at Brighton obſerved a purple tinge, and was thereby led to ſuſpect that they had ſuf-

fered ſome change in this reſpect. It is irregularly and repeatedly divided with branches, which are moſtly oppoſite, but often alternate and not unfrequently crowded together. The ultimate ramuli are very long. What to the naked eye appears to be a ſingle filament, under the higher powers of the microſcope, is ſeen to conſiſt of many agglutinated, or adhering cloſely together in the ſame manner as thoſe of *C. fœtida*, with which I apprehend this ſpecies poſſeſſes conſiderable affinity. Each individual of theſe extremely ſlender filaments is ſeparately jointed. The length of the joints is about equal to their diameter, and ſo far as I am able to judge from a dried ſpecimen, they each include a globule, of the ſame nature with thoſe of *C. fœtida*. The ſketch at Plate F (made by Mr. Hooker from a dried ſpecimen magnified 4 and 2) will ſerve to convey ſome idea of the plant, but I apprehend that it ſuffers more than moſt other ſpecies in drying, and it is principally from the obſervations of Mr. Borrer that this deſcription has been made.

116. *nana*. C. filis ramoſis, minutiſſimis, fuſco viridibus; ramis ramuliſque ſub alternis acuminatis; articulis diametro duplo longioribus. T. 30.

117. *minutiſſima*. C. filis ſub-ramoſis, minutiſſimis, hyalinis; ramis ſparſis, furcatis, obtuſiuſculis; diſſepimentis obſoletis; articulis longitudine variabilibus. T. F.

On Confervæ in the Sea.

This ſpecies, which has been obſerved both by Mr. Borrer and myſelf growing paraſitically on ſeveral of the Marine Confervæ, is ſo extremely minute as to be nearly imperceptible to the naked eye, and even the higheſt power of my microſcope is hardly ſufficient to aſcertain its nature. The filaments are ſometimes ſimple, but have moſt uſually two or three branches which are frequently forked. Diſſepiments may now and then be faintly diſtinguiſhed at uncertain diſtances from each other, but with this exception no mark of internal organization or even color can be obſerved. For the drawing at Plate F, which repreſents the plant magnified 2 and 1, I am indebted to Mr. Woods.

118. *lanuginosa.* C. filis sub-ramosis, minutissimis, ferrugineis; ramis sparsis, obtusiusculis; articulis medio pellucidis, diametro triplo longioribus. T. 45.

119.* *pluma.* C. filis repentibus, ramosis, minutis, intensè roseis; ramis erectis infra denudatis, supernè pinnatis pinnis oppositis, approximatis; articulis diametro duplo longioribus. T. F.

On the stalks of Fucus digitatus in Bantry Bay. *Miss Hutchins.*

This beautiful species, of which a drawing and specimens were communicated by Miss Hutchins to Mr. Turner, may be readily distinguished from *C. repens* and *C. tenella,* to which it is most nearly allied, by having the erect branches thickly pinnated with opposite ramuli towards their apices. The capsules are globose and mostly terminal. The drawing at Plate F, for which I am indebted to Mr. Hooker, represents *C. pluma* of the natural size, and also when magnified 1.

120. *repens.* C. filis repentibus, ramosis, implexis, minutis rufis; ramis erectis; ramulis sub secundis obtusis; articulis diametro triplo longioribus. T. 18.

My former reference to Dillenius is erroneous, as has been pointed out by Mr. Turner in his remarks on the Dillenian Herbarium, *Lin. Trans.* VII. p. 106.

121. *tenella.* C. filis repentibus, ramosis, implexis, minutis dilutè roseis; ramis erectis, simplicibus; articulis longitudine variabilibus. T. *F.*

On the Shells of the large Scallop at Bantry. *Miss Hutchins.*

The present is one of the numerous species for the discovery of which the botanical world is indebted to *Miss Hutchins.* The filaments are of the same size and strike root precisely in the same manner as those of *C. repens,* from which it differs in its lighter color, extremely flaccid nature, more slender growth, and in having the erect branches undivided. The drawing at Plate F was made by Mr. Hooker from a dried specimen, and represents *C. tenella* both of the natural size and when magnified 1.

122.* *Daviesii.* C. filis ramosis, erectis minutis, liberis roseis; ramis sparsis acuminatis; articulis diametro triplo longioribus. T. F.

On Marine Algæ; *Rev. Hugh Davies.* Bantry Bay; *Miss Hutchins.* At Brighton; *Mr Borrer.*

I have a pleasure in naming this species after my valuable friend, the Rev. Hugh Davies, whose intimate knowledge of many branches of Natural History is well known, and to whose liberality this work is greatly indebted. Its length rarely exceeds three or four lines, and it may be distinguished from its congeners by its unentangled growth, and far different ramification. Mr. Borrer informs me that he has once discovered it with capsules, placed in rows along the upper side of the ramuli. For the drawing at Plate E. I am indebted to Mr. Hooker; it represents the plant magnified 3, and a piece of the filament magnified 1.

123. *Rothii.* C. filis dichotomo-ramosis, erectis, brevibus, densè cæspitosis, phœniciis; ramis ramulisque alternis; articulis diametro sub-triplo longioribus. T. 73.

Several years ago I received a specimen of this plant from Mr. Robert Brown, gathered by himself in the North of Ireland, and which he had named *C. phœnicia.* It was not till after I had published my description of *C. Rothii* that I recognised it as the same species, which I much regret, as Mr. Brown certainly first discovered it in Britain. It has since been found by Mr. W. W. Young, near Dunraven, in Glamorganshire, and by Messrs. Hooker and Borrer, on the Coast of Durness, Sutherland.

124.* *floridula.* C. filis ramosis, tenuibus, cæspitosis, implexis, dilutissimè roseis; ramis sparsis, simpliciusculis, remotis; articulis diametro sub-triplo longioribus. T. F.

Rocks on the Sea shore. On the Galway Coast; *Dr. Scott.* On the Antrim Coast; *Mr. Mackay.*

I received specimens of this species from the late Dr. Scott, gathered on the Galway coast, where it covers the rocks on the Sea shore. The fila-

ments are much finer than human hair, but their growth is ſo entangled, that in a dried ſpecimen it is almoſt impoſſible to ſeparate them ſo as to aſcertain their length, which is I believe generally about half an inch; when freſh, according to Mr. Mackay's obſervations, they are of a fine bloom color, but this they loſe in drying and then become of a reddiſh dull green. The ſketch at Plate F was made by Mr. Hooker from a dried ſpecimen, and repreſents the filament magnified 3 and 1.

125.* *interrupta.* C. filis ramoſis, breviuſculis, purpuraſcentibus; ramis ramuliſque alternis; articulis ſurſum incraſſatis, truncatis, diametro ſub-quadruplo longioribus.

C. interrupta. Eng. Bot. t. 1838.

On Marine Confervæ. At Brighton; *Mr. Borrer.* In Bantry Bay; *Miſs Hutchins.*

The capſules of this ſpecies are divided in a remarkable manner by a tranſverſe pellucid line.

126. *pedicellata.* C. filis dichotomo-ramoſis rubris; ramulis alternis multifidis; articulis ſurſum incraſſatis, diametro ſub-quintuplo longioribus. T. 108.

127. *ſetacea.* C. filis dichotomo-ramoſis, virgatis, ſtrictis, intensè ſplendidèque roſeis; ramis elongatis; articulis ſub cylindraceis diametro ſub quintuplo longioribus. T. 82.

128. *corallina.* C. filis dichotomis, lubricis, ſplendidè aureo-rubris; articulis ſurſum incraſſatis, diametro quadruplo longioribus. T. 98.

Since I publiſhed my deſcription of *C. corallina* I have not ſeen any recent ſpecimens, but I have examined many in a dried ſtate, and theſe have led me more and more to ſuſpect that my drawing, as well as former obſervations reſpecting the fructification of this ſpecies, are in at leaſt ſome degree inaccurate. It is impoſſible to form any decided opinion from dried ſpecimens, but I am inclined to believe that the involucrum, till the ſeeds have arrived at maturity, ſo cloſely and compactly envelop the internal

jelly, as to bear the resemblance as well as answer the purpose of a capsule. In some specimens I have seen a still stronger resemblance of capsules, than what I have figured at D, but they were of a smaller size, and had evidently not arrived at maturity, which having attained, they would I apprehend by an expansion of the involucrum, have appeared as is represented in English Botany, with their internal jelly exposed without any covering.

129.* *barbata*. C. filis dichotomo-ramosis, lætè sanguineis, apice fibrosis; fibris multifidis tenuissimis; articulis sursum incrassatis, diametro quintuplo longioribus.

C. barbata. Eng. Bot. t. 1814.

On the Beach at Brighton. *Mr. Borrer.*

The seeds of this species are imbedded in naked jelly, and guarded by an involucrum instead of a capsule.

130.* *multifida*. C. filis ramosis, rubris; ramulis sub-ternatis, distantibus, brevibus, multifidis; articulis diametro multuplo longioribus.

C. multifida. Eng. Bot. t. 1816. (excl. Syn.)

In the Sea. On the Devonshire Coast; *Mrs. Griffiths.* On the Beach at Brighton, and near Newhaven; *Mr. Borrer.* In Bantry Bay; *Miss Hutchins.*

Dr. Smith erroneously supposed this species to be Hudson's *C. multifida*, forgetting that as well as *C. imbricata* it had been before proved to be *C. equisetifolia* of Lightfoot. As however *multifida* has never been used as a name for *C. equisetifolia*, there cannot I apprehend be any objection to its being retained for the present species. Mr. Borrer informs me that he has discovered a fructification on this species, differing from the one represented in English Botany, and of the same nature with that of *C. barbata*.

131. *equisetifolia*. C. filis ramosissimis, crassis, rubris; ramis utrinque attenuatis, ramulis verticillatis, imbricatis, brevibus, multifidis, undique obsessis; articulis diametro multuplo longioribus. T. 54.

The Rev. G. R. Leathes discovered the fructification of this species in a

ſpecimen which he gathered in Auguſt, 1807, on the beach at Yarmouth. It is of the ſame nature with that of *C. barbata*, conſiſting of ſeeds immerſed in a pellucid jelly, and ſurrounded by numerous filaments which wholly envelop it. It is ſcattered over the ſides of the branches, and has to the naked eye the appearance of being only very young ſhoots.

132. *verticillata.* C. filis dichotomo-ramoſis, cartilagineis, craſſis, fuſco-olivaceis; ramulis verticillatis, incurvis, breviſſimis, plerumque bifurcis, undique obſeſſis; articulis diametro brevioribus. T. 55.

133. *ſpongioſa.* C. filis ramoſis, cartilagineis, craſſis, olivaceis, ramulis ſimplicibus, breviſſimis, undique imbricatis; articulis diametro ſub-ſeſquilongioribus. T. 42.

134. *villoſa.*† C. filis ramoſis, flaccidis, craſſis, elongatis, flavis; ramis oppoſitis, remotis, ramulis minutis, pinnatis, ſub-verticillatis, undique obſeſſis; articulis diametro dimidio brevioribus. T. 37. and T. *F.*

In September, 1808, the Rev. G. R. Leathes found a ſpecimen on the Yarmouth Beach, on which Mr. Turner has favored me with the following remarks. "The fibres grow as deſcribed in the *Britiſh Conferva*, from every 3d, 4th, or 5th diſſepiment, but rather in tufts than in whirls: they are long, ſometimes ſimple, but moſtly three or four times dichotomous, with acute angles; towards their baſes grow on them ſhort oblong dark-brown bodies (whether ſeeds or capſules it is impoſſible from their minuteneſs to determine) cluſtered and ſeſſile, but from the collapſing of the juices, often looking pedunculate. The filaments are ſo obſoletely jointed that it is difficult to ſay, if they are ſo in reality or not, though they look

† I have received ſpecimens of *Fucus aculeatus* and *Fucus ligulatus* from Mr. Backhouſe, which are covered with ſhort ramuli of the ſame nature and appearance with thoſe of *C. villoſa.* In the former I found to my great ſurprize that the aculei are regularly jointed, and that the main filaments, eſpecially towards their extremities, have a ſimilarly jointed internal tube running longitudinally through them, and occupying nearly half of their width. I was particularly ſtruck with the reſemblance of the joints to thoſe of *C. villoſa*, and they fully confirm Mr. Turner's opinion, that there is a ſtrong affinity between theſe two plants.

ſo in drying." In dried ſpecimens theſe bodies hardly appear to belong to the fructification at all. For the drawing at Plate F, which repreſents the ſuppoſed fructification highly magnified, I am indebted to Mr. Leathes.

135. *fluviatilis.* C. filis ramoſiſſimis, cartilagineis, olivaceis; ramis ramuliſque utrinque attenuatis; diſſepimentis verrucoſis; articulis utrinque dilatatis, diametro ſubquintuplo longioribus. T. 29.

For the fructification of this ſpecies ſee Introduction, p. 20.

136. **toruloſa.* C. filis ſub-ſimplicibus, nodoſis, cartilagineis, baſi attenuatis, apice ſub incraſſatis, olivaceis; articulis utrinque contractis, diametro ſub triplo longioribus. T. *F.*

C. toruloſa. MOHR *in Schrader's Journal for* 1801, p. 324. t. 3. f. 1. 2.
ROTH. *Cat. Bot.* III. p. 250. *Fl. Germ.* III. pars 1. p. 529.

C. fluviatis nodoſa, Fucum æmulans. DILL. *Hiſt. Muſc.* p. 39. t. 7. f. 48.

In Mountain Streams. Near Ludlow; *Dillenius.* Angleſea; *Rev. H. Davies.*

I am ſtill ſomewhat doubtful whether this ſpecies ſhould be conſidered as diſtinct from *C. fluviatilis*, but I have nevertheleſs admitted it here as ſuch, in reſpect to the opinion of the late Dr. Mohr and Dr. Roth, the former of whom in the German tranſlation of this work, ſays, that he has ſeen the two plants growing together, and is convinced they are perfectly diſtinct, to which I have thought it right to accede, never having myſelf enjoyed an equally favorable opportunity for the examination of them. The fructification is ſimilar to that of *C. fluviatilis.* For the drawing at Plate F, I am indebted to Mr. Hooker, in which the joints are repreſented magnified 5, with a tranſverſe ſection of the filament to ſhew the ſeeds magnified 2, and alſo the ſeeds ſeparated and magnified 1.

137. *ciliata.* C. filis dichotomis, apice forcipatis rubris; diſſepimentis verticillatim ciliatis; articulis medio pellucidis, diametro longitudinem vix ſuperantibus. T. 53.

138. *diaphana.* C. filis ramosissimis apice forcipatis, purpurascentibus; dissepimentis obsoletis; articulis utrinque torosis, medio pellucidis, diametro sub longioribus. T. 38.

139. *rubra.* C. filis ramosissimis rubris; ramulis setaceis, apice furcatis; articulis utrinque attenuatis, centrum versus pellucidis, diametrum longitudine sub æquantibus. T. 34.

In Mr. Turner's Herbarium there are bleached specimens of a light straw color, gathered by Mrs. Griffith at Sidmouth, which differ so much from the common appearance of *C. rubra,* as to have induced both these Botanists to regard them as belonging to a separate species. They are scarcely two inches long, and comparatively thin: their substance is remarkably thick and cartilaginous, but the leading difference is in the joints, each of which is marked in the center with a dark globular spot, nearly similar to those which may be often seen in *C. polymorpha.* The fructification consists of seeds scattered through the interior of the ultimate ramuli, but these can by no means be considered as an indication of specific difference, since they have been also observed in many of the other capsuliferous Confervæ. This remarkable appearance of *C. rubra* is represented at Plate F, magnified 5 and 3, from a sketch with which Mr. Hooker favored me.

140. *tetragona.* C. filis ramosissimis rubris; ramulis patento-horizontalibus, basi attenuatis, apice acuminatis, fasciculatis, brevibus; articulis ovato-cylindraceis, diametro duplo longioribus. T. 65.

141. *tetrica.* C. filis decomposito-pinnatis, fusco-rubris, luridis; pinnis pinnulisque alternis, extremis curvatis; articulis diametro sub-triplo longioribus; capsulis solitariis, pedunculatis. T. 81.

Since the publication of this species it has been found abundantly in Bantry Bay, by Miss Hutchins, and on the Devonshire coast by Mr. Griffiths and Miss Hill.

142. *rosea.* C. filis decomposito-pinnatis, tenuibus, roseis; pinnis pinnulisque alternis; articulis diametro sub-triplo longioribus; capsulis secundis sessilibus. T. 17.

Dr. Roth considers the plant which I have figured to be a variety of *Ceramium roseum.* Mr. Turner and Mr. Borrer are of opinion that the plant which grows in the Yare, and which is that figured in *English Botany* is a distinct species, but I apprehend that every difference between them, entirely arises from the growth of the former in the sea, and of the latter in a river, where the water at some states of the tide, of course contains a much less quantity of salt.

143.* *Borreri.* C. filis decomposito-pinnatis, tenuibus, roseis; pinnis pinnulisque alternis, flexuosis, ultimis fastigiatis; articulis diametro sub-duplo longioribus.

C. Borreri. Eng. Bot. t. 1741.

Among the rejectament of the Sea at Yarmouth. *Mr. Borrer.*

I have never seen any other than a dried specimen of this plant, and it is therefore perhaps that I am inclined to doubt, whether it ought to be considered as more than a variety of *C. rosea,* which is a very variable species.

144. *Turneri.* C. filis pinnatis, roseis; pinnis oppositis, sub simplicibus; articulis diametro triplo longioribus. T.

145. *plumula* C. filis ramosis roseis; ramis alternis pinnatis; pinnis oppositis, horizontaliter recurvis; pinnulis secundis; articulis diametro sub triplo longioribus. T. 50.

C. Turneri. Eng. Bot. t. 1637.

146.* *Mertensii.* C. filis ramosis, flavescentibus; ramis pinnatis; pinnis subopositis brevibus; articulis diametro dimidio brevioribus.

C. Mertensii. Eng. Bot. t. 999.

On the Beach at Yarmouth; *Mr. Wigg.* In Bantry Bay; *Miss Hutchins.* Coast of Durham; *Mr. Backhouse.*

147.* *Hookeri.* C. filis ramosissimis, primariis incrassatis inarticulatisque, pallidè rufo fuscescentibus; ramulis confertis, abbreviatis, pinnatis, pinnulis alternis articulatis; articulis diametro sesquilongioribus. T. 106.

148.* *arbuscula.* C. filis primariis incrassatis, inarticulatis, infernè denudatis, supernè ramosissimis, rubris; ramulis confertis, sub verticillatis, abbreviatis, multifidis, articulatis; articulis longitudine diametrum æquantibus. T. 85. & T. *G.*

Since I published my description of this species, it has been found on the shores of Caithness and Orkney by Mr. Borrer and Mr. Hooker. Two kinds of fructification produced by this species, from a drawing by Mr. Hooker, are represented in Plate G magnified 1.

149. *coccinea.* C. filis ramosissimis, primariis incrassatis, hirsutis, inarticulatisque, coccineis; ramis alternatim decomposito-pinnatis; pinnulis ultimis multifido-fasciculatis, articulatis; articulis diametro sub brevioribus. T. 36. & T. *G.*

β. *tenuior.* Filis tenuioribus.

The variety β has been sent to Mr. Turner from the southern coasts by Mrs. Griffiths, and also from Ireland by Mr. Templeton and Miss Hutchins. Its size is more slender than that of *a*, and its ramuli shorter, and less feathery. The most remarkable difference however lies in the capsules, which instead of being ovate, are lanceolate, and produce two rows of small globular seeds; they are sessile at the axillæ of the ramuli. The seeds of the ovate capsules, which in my T. 36 are represented globular, should, according to Mr. Turner's observations, have been made pyriform. The lanceolate capsules of the variety *B* are represented in my plate F, from a highly magnified drawing by Mr. Hooker.

b. *longitudinaliter venosæ.*

150. *elongata.* C. filis ramosissimis, cartilagineis, crassis, reticulato-venosis, purpureis; ramis ramulisque elongatis, diffusis; articulis diametro dimidio brevioribus. T. 33.

Beſides the fructification repreſented in T. 33, the minute lanceolate capſules alluded to in the deſcription, are alſo repreſented in the ſupplementary plate F, from a ſketch by Mr. Hooker. Theſe pod-like proceſſes, in which the ſuppoſed ſeeds are lodged, at length grow into branches.

151. *fuſca.* C. filis ramoſis, venoſis, fuſcis; ramis diſtantibus, ſub-alternis; ramulis patentibus clavatis; articulis medio tranſverſim faſciatis, diametro duplo longioribus. T. 95.

152. *polymorpha.* C. filis dichotomis, venoſis, faſtigiatis, cartilagineis, atropurpuraſcentibus; articulis centro punctatis, diametro ſub-brevioribus. T. 44.

153.* *Brodiæi.* C. filis ramoſiſſimis, venoſis, purpureo-nigreſcentibus; ramis elongatis; ramulis ſparſis, patentibus, multifidis, faſciculatis; articulis ramorum obſoletis, ramulorum diametro ſub-longioribus. T.

154. *fucoides.* C. filis ramoſiſſimis, venoſis, diffuſis, ſubcartilagineis; fuſconigris; ramulis horizontaliter patentibus, dichotomis, ultimis incurvis, acuminatiſque; articulis diametro ſub-ſeſquilongioribus. T. 75.

155. *nigreſcens.* C. filis ramoſiſſimis, venoſis, ſtrictis, ſub cartilagineis, fuſconigris; ramulis erectis dichotomis acuminatis; articulis diametro ſub-ſeſquilongioribus.

C. nigreſcens. Eng. Bot. t. 1717. (exc. ſyn.)

On the Beach at Yarmouth; *Mr. Turner.* Coaſt of Devonſhire; *Mrs. Griffiths.* Brighton; *Mr. Borrer.*

I have been induced here to admit this ſpecies under the name of *C. nigreſcens* in oppoſition to the opinion of Sir Thomas Frankland, who has ſent me the following plant by that name, becauſe I find that this is the plant ſo called by moſt Botaniſts, and even as Mr. Turner aſſures me, by ſome who were well acquainted with Hudſon. It ſo ſtrikingly reſembles *C. fucoides* in the ſize and color of the filaments, that it is not without ſome heſitation that I publiſh it as a ſeparate ſpecies, but Mr. Turner who has repeatedly examined recent ſpecimens of the two plants together, is de-

cidedly of opinion that they are perfectly diſtinct. It differs in having its main filament of far greater thickneſs than the reſt, and the whole of its branches remarkably ſtraight and erect, while the habit of the other is particularly buſhy. The outline too of the two ſpecies is very diſſimilar, that of *C. fucoides* being nearly orbicular, but that of *C. nigreſcens* narrowly cuneiform.

156.* *urceolata.* C. filis ramoſiſſimis, venoſis, diffuſis, rufo-fuſcis; ramulis patentibus, brevibus; articulis caulis longis, ramulorum brevioribus. T. *G.*

C. nigreſcens. Fl. Ang. p. 602?

On Rocks and the larger Fuci in the Sea. On ſtems of *F. digitatus*, and on Rocks oppoſite the Bathing-houſe at Scarbro'; *Sir T. Frankland.* On ſtems of F. digitatus in the Iſle of Wight; *Mr. Turner* and *Mr. Borrer.* Alſo on the ſame Fucus on the Beach at Brighton; *Mr. Borrer.* Near Forres; *Mr. Brodie.* Devonſhire Coaſt; *Miſs Hill.*

For ſpecimens of this plant I have to expreſs my obligations to Sir Thomas Frankland, who, as mentioned under the preceding ſpecies, ſent it to me by the name of *C. nigreſcens* of Hudſon. Mr. Turner informs me that he has ſeen it in ſome Herbaria marked by Mr. Lightfoot, "*C. urceolata, M. S.*" an appellation peculiarly appropriate, as the capſules differ in their ſhape from thoſe of every other Conferva, and approach, eſpecially when dried, thoſe of *Splachnum urceolatum* or *ampullaceum.* It moſt commonly grows paraſitically on the larger Fuci, and as remarked by Miſs Hill, looks then at firſt ſight like red wool. Its color in that ſtate is a fine rich brown red, which would hardly be ſuppoſed from the dull black that it aſſumes in drying. The veins or tubes which compoſe the filament are fewer than thoſe of *C. fucoides* and bear more reſemblance to thoſe of *C. ſtricta.* The joints towards the root are long, but become gradually ſhorter as they approach the ultimate ramuli, in which their length ſcarcely exceeds the diameter. The drawing at Plate G was made by Mr. Hooker from a

ſpecimen which had been dried, and repreſents the end of a filament magnified 4, and alſo ſeparately the upper and lower joints magnified 1.

157.* *patens.* C. filis ramoſis, venoſis, ſub-diffuſis, roſeis; ramis ramuliſque ſparſis, patentiuſculis; articulis diametro ſub-duplo longioribus.

On Fucus digitatus, in the Sea, near Bantry; *Miſs Hutchins.* At Seaton, Devon; *Mrs. Griffiths.*

This ſpecies, for a ſpecimen of which I am indebted to Mr. Turner, is nearly allied to *C. ſtricta,* but the habit of the two plants is very different. It is of about the ſame ſize, but may be diſtinguiſhed by its more diffuſe growth, by its different ramification, and numerous ſhort lateral ramuli. The length of the joints in both ſpecies is ſubject to ſome variation, but thoſe of *C. patens* are comparatively ſhorter. Many of the ultimate ramuli in the ſpecimen now before me are ſwollen, and in theſe red globules may be obſerved, ſimilar to thoſe which in ſeveral of the other marine algæ are called ſeeds; but with all due deference to the opinion of my friend Mr. Turner, I muſt confeſs that I ſtill feel myſelf very doubtful of their real nature. The ſketch at Plate G was made from a dried ſpecimen by Mr. Hooker, and repreſents different parts of *C. patens* magnified with powers 5, 3, and 1 of his microſcope.

158. *ſtricta.* C. filis ramoſis, venoſis, ſtrictis, faſtigiatis, tenuibus, phœniciis; ramis dichotomis erectiuſculis; articulis diametro ſub-triplo longioribus. T. 40.

β. diffuſa. Filis diffuſis.

The plant which I have here arranged as a variety of *C. ſtricta,* was gathered in the neighbourhood of Bantry by Miſs Hutchins, and in her opinion is a diſtinct ſpecies. There is indeed at firſt ſight a ſtriking difference between them, but this gradually vaniſhes when the two plants are compared. It differs in its mode of growth, which is much more buſhy, and in its general outline, which is more orbicular. The common appearance of *C. ſtricta* retains its gloſſy red when dried, but the color of this variety then

turns to a dull dirty brown. In their ſtructure when examined with a microſcope they however exactly agree, as well as in the fruit, which has been diſcovered in the former ſubſequently to its publication in this work, and conſiſts of ſmall ovate dark red capſules, ſeſſile, or nearly ſo on the upper branches.

159.* *fibrata.* C. filis ramoſis, venoſis, rubicundis; ramis dichotomis; ramulis ſub-faſciculatis, apice fibris pellucidis obſeſſis; articulis caulis longis, ramulorum diametrum longitudine æquantibus. T. *G.*

On Marine Algæ, near Forres; *Mr. Brodie.* At Cawſie, Murrayſhire; *Mr. Hooker* and *Mr. Borrer.*

The filaments, which grow to the length of about two inches, are branched with repeated dichotomies, and ſtrongly marked with longitudinal veins. Their ſummits are fringed with numerous, long, extremely ſlender, dichotomous, tranſparent fibres, of which from their extreme tenuity, it is almoſt impoſſible, eſpecially in a dried ſpecimen, to aſcertain the ſtructure, but they, I think undoubtedly are of the ſame nature with thoſe of *C. barbata.* Beſides an appearance of capſules in the dried ſpecimens now before me, I alſo obſerve ſeveral maſſes of looſe jelly, imbedding numerous pyriform ſeeds, and ſurrounded by a few ſhort ſegments reſembling an involucrum. I at firſt ſuppoſed that the fructification is nearly of the ſame nature with that of *C. corallina*, and that the appearance of capſules is occaſioned by the involucrum being compactly cloſed over the jelly to protect the yet unripe ſeeds, but Mr. Borrer ſays, "When I examined it freſh with Mr. Hooker, at Brodie, we ſaw the capſules as we thought them, ſplitting at the apex (I think into four ſegments) but it never ſtruck me that they were any thing analogous to the involucrum of *C. Corallina.*" In another ſpecimen now before me there are no capſules, but many of the joints are ſwollen, and each of theſe includes a dark colored globule, ſimilar to thoſe obſervable in many other Confervæ. At

Plate G, from a ſketch by Mr. Hooker, a branch of *C. fibrata* is repreſented magnified 3, and alſo the joints of the ſtem magnified 2.

160.* *denudata.* C. filis ramoſiſſimis, venoſis, diffuſis, fuſceſcentibus; ramis ſparſis, divaricatis, elongatis, remotis; articulis diametro ſub-ſeſquilongioribus. T. *G.*

In the Sea at Southampton; *Miſs Biddulph.*

Mr. Borrer favored me with ſpecimens of this ſpecies, which he received from Mr. Sowerby, but they are ſo imperfect at the apices, that without his aſſiſtance I ſhould not have ventured to publiſh it. The color is brown, and Mr. Borrer's largeſt ſpecimen is about four inches in length. The filaments are repeatedly branched: the branches iſſue almoſt at right angles and are placed without order, but uſually at conſiderable diſtances from each other, and Mr. Borrer in a letter ſays, "Mr. Sowerby told me that the points of all the ramuli were very long and ſlender when the ſpecimens were recent, and fell off when they were put into freſh water." The length of the joints is nearly the ſame throughout the plant, and is about half greater than the diameter. The capſules have not been diſcovered. I am indebted to Mr. Woods for the ſketch at Plate G, which repreſents the ramification of the natural ſize, and the joints when magnified 3.

161.* *badia.* C. filis ramoſis, venoſis, ſtrictis, rubro-nigreſcentibus; ramis elongatis; ramulis abbreviatis, remotis, ſub-ſimplicibus; articulis diametrum ſeſquilongioribus. T. *G.*

On the Beach at Haſtings; *W. Borrer, junr. Eſq.*

Mr. Borrer who has examined this plant whilſt recent, conſiders it as a diſtinct ſpecies, and ſo far as can be judged from a dried and ſomewhat imperfect ſpecimen, I entirely coincide with his opinion. He thinks that it is intermediate between *C. nigra* and *C. urceolata*, from both of which among other things it may be at once diſtinguiſhed by its joints, which are nearly of the ſame length in every part of the filament, and in that reſpect approaches more to *C. fucoides.* For the ſketch in Plate G, I am indebted

to Mr. Woods; it repreſents a filament of the natural ſize, and alſo the joints of the ſtem and a ramulus magnified 3.

162. *nigra.* C. filis ramoſis, venoſis, rubro-nigreſcentibus; ramis elongatis; ramulis abbreviatis, remotis, multifidis, ſub-penicilliformibus; articulis caulis longis, ramulorum triplo brevioribus.

C. nigra. Fl. Ang. p. 595. WITHERING. IV. p. 131.

C. atro-rubeſcens. T. 70.

It is already mentioned in the Introduction that the ſpecies which I publiſhed with the name of *atro-rubeſcens* is Hudſon's *C. nigra.*

163.* *fibrilloſa.* C. filis ramoſiſſimis, venoſis, rubris; ramis ramuliſque ſparſis, ultimis brevibus, multifidis, apicibus protenſis, fibrilliformibus; articulis inferioribus longis, ſummis abbreviatis. T. *G.*

In the Sea. On the Beach at Brighton and Shoreham; *Mr. Borrer.* At Seaton; *Mrs. Griffiths.* Bantry Bay; *Miſs Hutchins.*

The neareſt affinity of this ſpecies is with *C. byſſoides*, from which it may however be readily diſtinguiſhed by its more diffuſe and irregular ramifications. The ultimate ramuli are tufted as in that ſpecies, but they are leſs numerous, by far more ſlender, and more repeatedly dichotomous. Mr. Borrer who has attentively ſtudied this plant whilſt freſh from its place of growth, in which ſtate alone theſe ſlender ultimate ramuli can be examined with much advantage, informs me, "that they are not compoſed, like the other parts of the plant, of ſeveral parallel tubes, but are ſimply tubular, and ſpuriouſly jointed *(utriculis matricalibus)*, the length of the joints many times exceeding the diameter." Mr. Borrer alſo ſays, but which I have not myſelf obſerved, that ſimilar fibres occaſionally occur in other ſpecies of this ſection which are uſually without them, and therefore queries whether they may not poſſibly be a paraſitical production. The capſules reſemble thoſe of *C. byſſoides*, except that they are moſtly raiſed on ſhort fruit ſtalks. For the ſketch of this ſpecies at plate G, I am indebted to Mr. Hooker; it repreſents a branch magnified 4, and alſo the joints of the lower part of the filament magnified 3.

164. *byſſoides*. C. filis decompoſito-pinnatis, venoſis, flaccidis, rubris; pinnis pinnuliſque alternis, ultimis perbrevibus, multifidis, penicilliformibus; articulis inferioribus longis, ſummis abbreviatis. T. 58.

165.* *paraſitica*. C. filis bipinnatis, venoſis, rigidiuſculis, fuſco-rubris; pinnis pinnuliſque alternis; articulis diametro ſub-brevioribus.

C. paraſitica. *Fl. Ang*. t. 604. WITH. IV. p. 142. *Eng. Bot*. t. 1429.

On Fuci. Coaſt of Yorkſhire, Cornwall, and Dorſetſhire; *Hudſon*. At Scarboro'; *Sir T. Frankland, Bart*. Bantry Bay; *Miſs Hutchins*.

166. *pennata*. C. filis pinnatis, venoſis, rigidiuſculis, olivaceis; pinnis ſub-oppoſitis elongatis, approximatis, ſtrictis, ſpinæformibus; articulis longitudine diametrum ſub-æquantibus. T. 86.

Mr. Borrer has gathered at Beachy Head an unuſually large variety of this ſpecies, with oblong pedicellated capſules.

167. *ſcoparia*. C. filis ramoſis, venoſis, rigidis, olivaceis; ramis alternis, ſub-bipinnatis, confertis; pinnulis, brevibus, alternis, acuminatis; articulis longitudine diametrum ſub-æquantibus. T. 52.

INDEX.

The numbers in the firſt column refer to the pages of the Introduction and Synopſis; in the ſecond to the Plate and correſponding Deſcription.

The names printed in italics are ſynonyms.

ERRATA.

Page 32, line 18, for T. 32 read T. 56.
—— 37, —— 2, for T. 43 read T. 41.
—— 41, ——25, for *lubrica* read *lucens*.
—— 50, ——27, for VAUCHER read *Conj. stellina*. VAUCHER. *Hist. des Conferves*, p. 75. t. 7. f. 1.
—— 61, ——23, for T. 89 read T. 69.
—— 79, ——20, after T. add 100.
—— 81, ——13, after T. add 107.

The numbers to five Plates in the fifth Fasciculus, were omitted by the Engraver; they should stand as follows.

C. stricta.	T. 40.
C. amphibia.	T. 41.
C. spongiosa.	T. 42.
C. purpurea.	T. 43.
C. polymorpha.	T. 44.

BRITISH CONFERVÆ.

SEPTEMBER 1, 1806.

FASCICULUS 10,

Price 5 s.

TO BE CONTINUED EVERY THREE MONTHS,

OF A

SYNOPSIS

OF THE

BRITISH CONFERVÆ,

CONTAINING

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COLOURED FROM NATURE;

WITH DESCRIPTIONS.

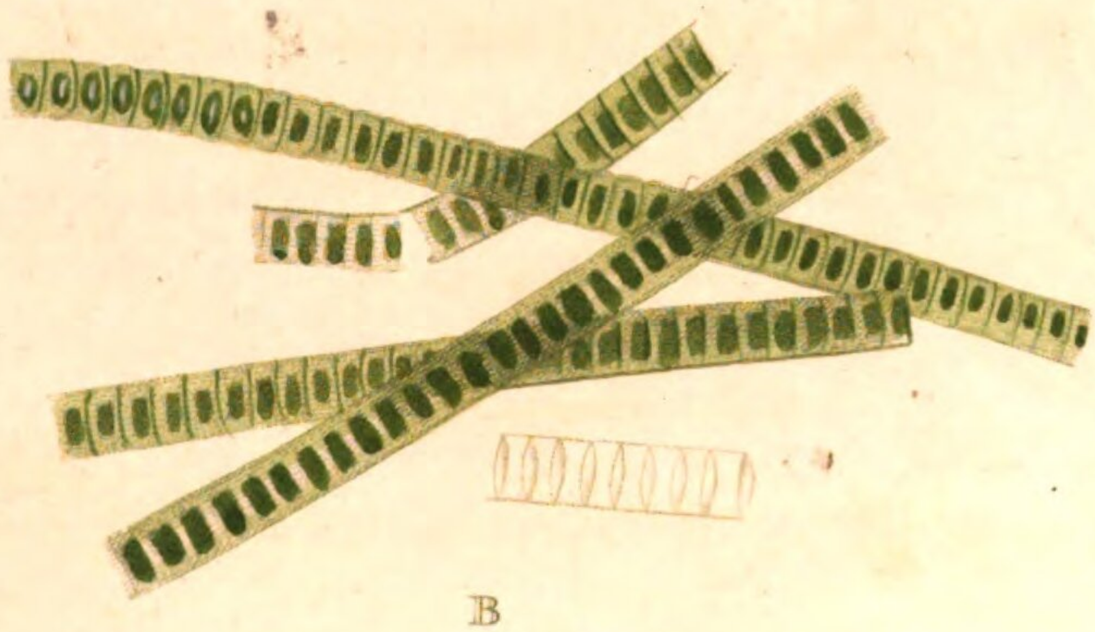
By LEWIS WESTON DILLWYN, F.R.S. & F.L.S.

LONDON:

PRINTED AND SOLD BY PHILLIPS AND FARDON,
GEORGE-YARD, LOMBARD-STREET.

1806.

A



B

Conferva difsiliens.

W. W. Young del.

J. Templeman sculp.

Published by L. W. Dillwyn June 1st 1806.

CONFERVA ACHARII.

C. filamentis radiatis, ramosis, rigidissimis, subcrassis, fragilibus, fuscescentibus; ramis divaricatis, patentibus, apicibus obtusis; articulis in longitudine.

C. Adnatæ. Weber & Mohr, [illegible] Cat. Bot. III. p. 298.

Parasitica velutina. Acharius [illegible]

On Rocky Banks in the neighbourhood of Norwich. [illegible] Mohr, Sp.

WE are indebted to Mr. Hooker for the earliest addition to the British Flora, he having discovered it growing plentifully among the rocks on Rocky Banks in the neighbourhood of Norwich, and by assigning it with authority (evidence proved that it is the C. Acharii of the above mentioned German author. It forms flat tufts of indeterminate extent of an olive brown color, by which it may be at once distinguished from C. velutina, which is most probably to be made out place or growth. The filaments grow [illegible] matted together, their texture is rather brittle, and each has very [illegible] one branch, which is short, pointed, very obtuse. The length of the joints is nearly equal to double the diameter. The fructification has not been observed.

C. Acharii may be distinguished from C. velutina, by its far different color, by its place and mode of growth, by its filaments which are much [illegible] and by its shorter joints.

In drying it adheres to paper (Gray) or Paper.

A. C. Acharii, natural size.

B. Ditto, magnified 3.

C. Ditto, ditto [illegible]

A

B

C

Conferva Acharii.

W. J. Hooker Esq.r del.t

J. Simpkins sculp.t

Published by L. W. Dillwyn

CONFERVA ACHARII.

C. filamentis ramoſis, cæſpitoſis, rigidiuſculis, ſub-erectis, fragilibus, fuſco-olivaceis; ramis brevibus, patentibus, apicibus obtuſis; articulis longiuſculis.

C. Acharii. Weber & Mohr, Reiſe durch Schweden, p. 104. t. 1. f. 6. Roth. Cat. Bot. III. p. 298.

Parmelia velutina. Acharius Methodus Lichenum. II. p. 245.

On ſhady Banks in the neighbourhood of Norwich, not uncommon. *W. J. Hooker, Eſq.*

WE are indebted to Mr. Hooker for the preſent addition to the Britiſh Flora, he having diſcovered it growing plentifully among the moſs on ſhady banks in the neighbourhood of Norwich, and by comparing it with authentic ſpecimens proved that it is the C. Acharii of the above mentioned German authors. It forms ſtrata ſeveral inches in circumference of an olive brown color, by which it may be at once diſtinguiſhed from C. velutina, which it moſt reſembles in its mode and place of growth. The filaments grow nearly erect and matted together; their nature is rather brittle, and each has rarely more than one branch, which is ſhort, patent and very obtuſe. The length of the joints is nearly equal to double the diameter. The fructification has not been diſcovered.

C. Acharii may be diſtinguiſhed from C. othotrichi by its far different color; by its place and mode of growth; by its filaments which are much leſs branched, and by its ſhorter joints.

In drying it adheres to neither Glaſs or Paper.

A. C. Acharii, natural ſize.
B. Ditto, magnified 3.
C. Ditto, ditto 1.

CONFERVA ACHARII.

C. filamentis ramosis, confertis, rigidiusculis, teretiusculis, fragilibus, fusco olivaceis; ramis brevibus, patentibus, apicibus obtusis; articulis longiusculis.

C. Acharii. Weber & Mohr, neue Beitr. zur Botanik, p. 1. t. 1. f. 6. Roth, Cat. Bot. III. p. 208.

Parmelia velutina. Acharius Methodus Lichenum. II. p. 6 [illegible]

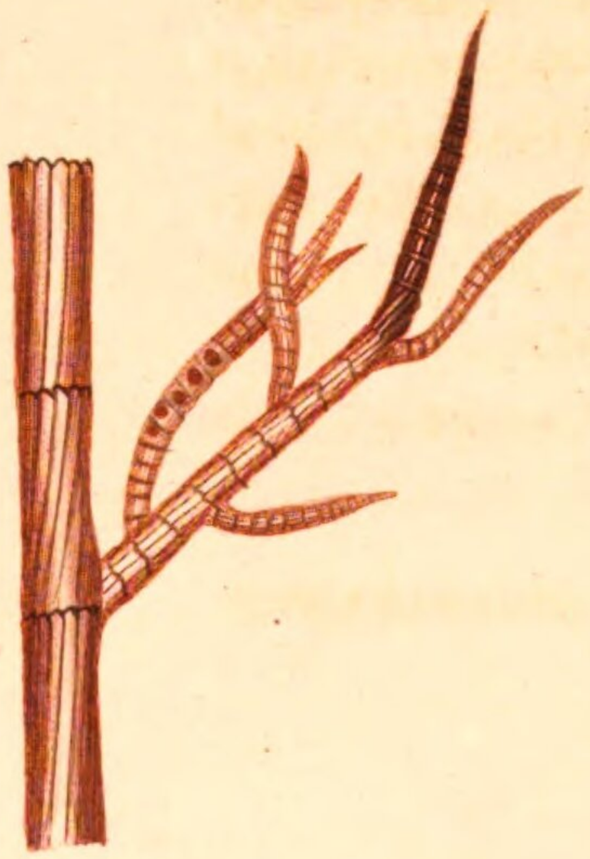
On footy Banks in the neighbourhood of Norwich, not uncommon. M. A. Hooker, Esq.

WE are indebted to Mr. Hooker for the present addition to the British Flora, he having discovered it growing plentifully among the moss on footy banks in the neighbourhood of Norwich, and by comparing it with authentic specimens proved that it is the C. Acharii of the above mentioned German authors. It forms tufts several inches in circumference of an olive brown color, by which it may be at once distinguished from C. velutina, which is most palpable in its mode and place of growth. The filaments grow nearly erect and matted together; their nature is rather brittle, and each has rarely more than one branch, which is short, patent and very obtuse. The length of the joints is nearly equal to double the diameter. The fructification has not been discovered.

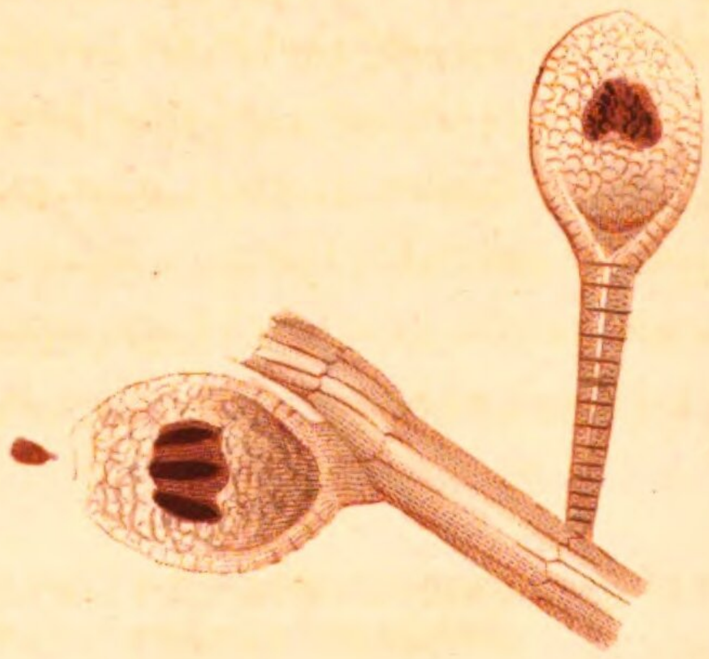
C. Acharii may be distinguished from C. chlorotica by its far different color; by its place and mode of growth; by its filaments which are much less branched, and by its shorter joints.

In drying it adheres to neither Cloth or Paper.

A. C. Acharii, natural size.
B. Ditto, magnified 3.
C. Ditto, ditto 1.



B



C

Conferva atro rubescens.

W.W.Young del.t

J.Simpkins sculp.t

Published by L.W.Dillwyn, Sept.r 2.nd 1806.

CONFERVA ATRO-RUBESCENS.

C. filamentis ramosis ſtriatis, ramis elongatis ſub-alternis, ramulis brevibus ſubulatis faſciculatis; capſulis ovatis pedunculatis.

In the Sea, adhering to Rocks, Stones and Shells.

THE preſent ſpecies appears to be far from uncommon on any of our ſhores, and is occaſionally found in large quantities in the baſins left by the tide. The length extends from four to ſix or even nine inches; the color varies from a light purple to a duſky red, and becomes black with age, or by expoſure to the air, as well as by drying; the root is a minute callus; the ſtem ſolitary, of the thickneſs of ſmall thread, repeatedly branched; the branches long, for the moſt part alternate, and irregularly beſet with awl-ſhaped ramuli one or two lines in length, ſeveral of which are diſpoſed near each other ſo as to give them a faſciculated appearance. The whole filament under the microſcope is ſtriated in a beautiful manner by longitudinal veins, which arch over at or near the diſſepiments, and at firſt ſight appear to form them; theſe veins are always in ſome degree ſpiral: the joints in the principal branches are in length frequently more than double their thickneſs, but in the ramuli the length and thickneſs are about equal; the capſules are ovate, and either lateral, on ſhort fruit ſtalks, or terminal at the end of the ſmaller branches; other globular ſubſtances, imbedded in the joints, are alſo obſervable bearing a ſtriking reſemblance to the ſuppoſed fruit which conſtitutes the variety β of Fucus coccineus, mentioned in the Synopſis of Britiſh Fuci, and which, in my opinion, is occaſioned by a collapſion of the juices.*

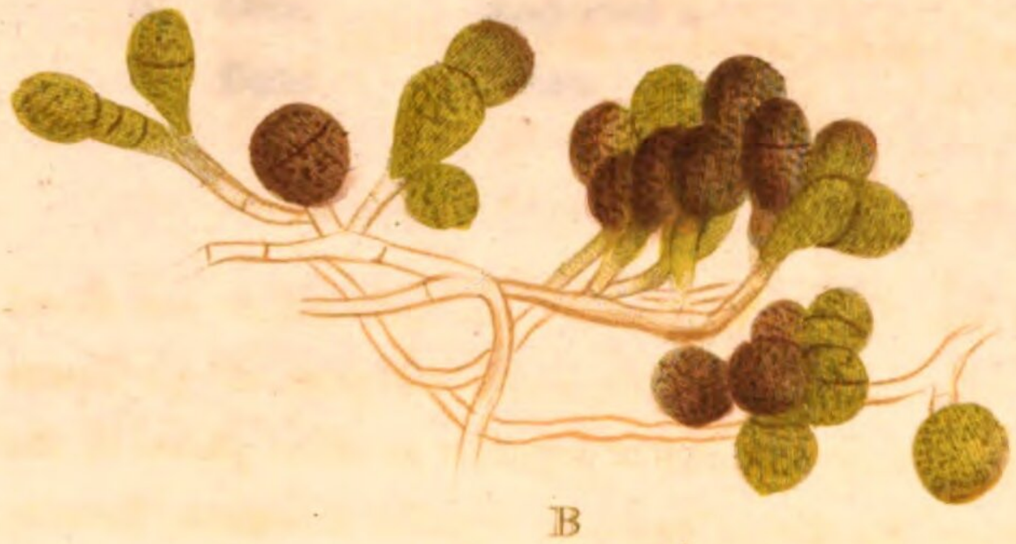
* I may take this opportunity to obſerve, that I have found the globular capſules and this ſuppoſed fructification on the ſame Frond of Fucus Coccineus.

This plant ſo thoroughly agrees with the deſcription of Hudſon's C. nigreſcens in the Flora Anglica, that it is with ſome heſitation I publiſh it under another name, but my friend Dawſon Turner informs me there are authentic ſpecimens of *that* plant extant, which prove the preſent to be an entirely diſtinct ſpecies.

The ſubſtance is ſtiff and rather rigid: in drying, the color becomes darker, and the plant adheres to paper, though but very ſlightly to glaſs.

A. C. rubro-ater, natural ſize.
B. Ditto magnified 2.
C. Ditto ditto 1.

A



B

C

Conferva multicapsularis.

W. W. Tuxy del.t

J. Simpkins sculp.t

Published by L.W. Dillwyn, Sept.r 1.st 1806.

CONFERVA MULTICAPSULARIS.

C. filamentis minutis repentibus olivaceis, ramis erectis ſimpliciuſculis brevibus, apicem verſus incraſſatis et capſuliferis; capſulis congeſtis ſphæricis.

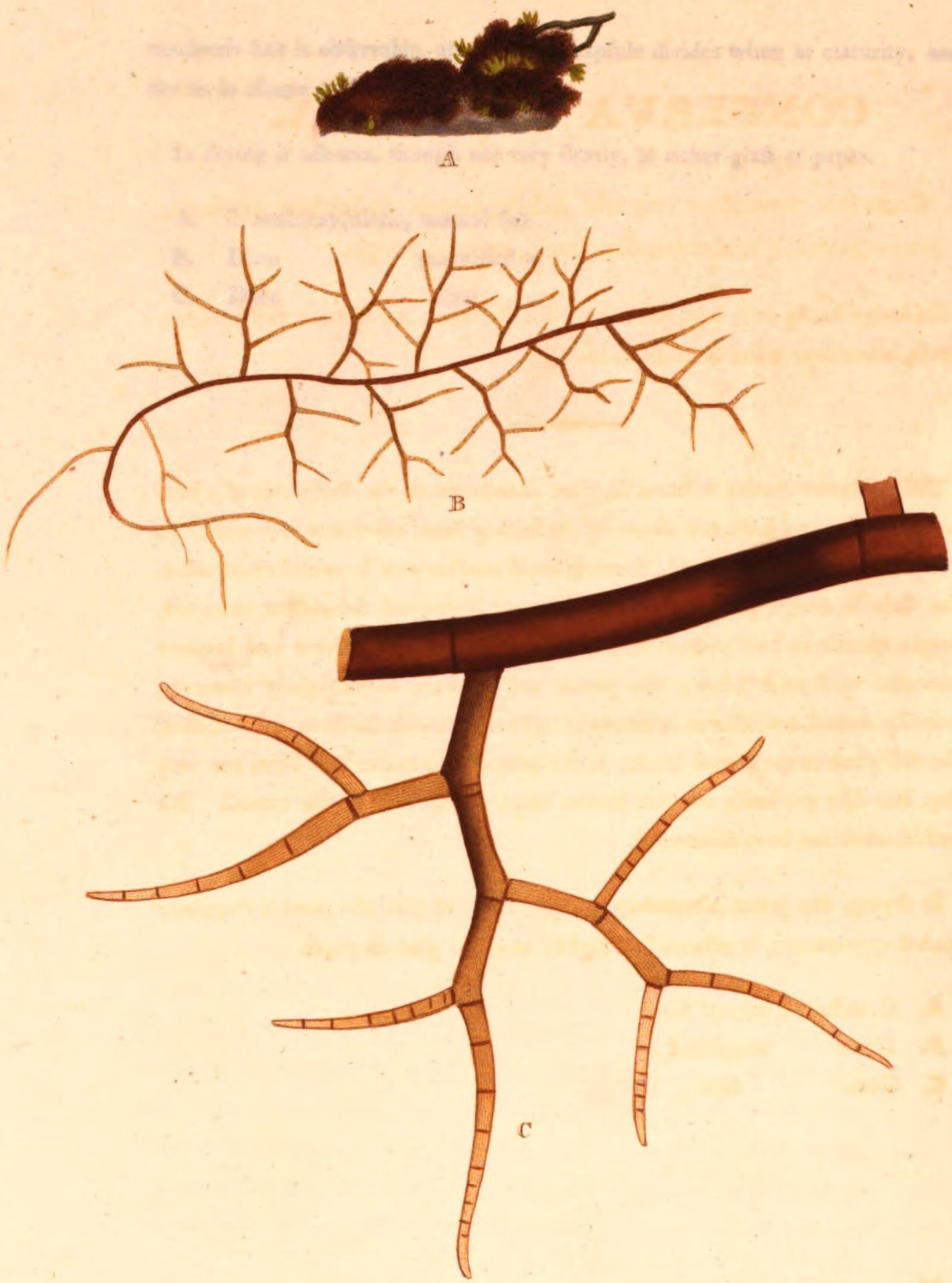
On clayey banks in high and expoſed ſituations about Swanſea.

FOR the diſcovery of this ſingular Conferva I am indebted to my friend William Weſton Young, who found it growing on ſeveral parts of the Town-hill, near Swanſea: we have ſince detected it together in other places in the neighbourhood. It grows on dry clayey banks, in expoſed ſituations, forming ſmall irregular patches, which bear a conſiderable reſemblance to ſome of the lichens. The color is a dark olive, often approaching to black, and forms a pleaſing contraſt with the light green of C. velutina, among which it is frequently found; the filaments are repent, thickly entangled, and very minute, ſo that it is impoſſible to aſcertain their length; they throw out a number of ſucker-like branches, from which numerous ſhort upright branches ariſe, for the moſt part ſimple, but ſometimes once or twice branched; theſe are thickeſt towards their apices, and are thus frequently divided into two or more ſhort palmated ſegments, on each of which a capſule is placed. The joints are very long in the creeping ſtems; they vary in the upright branches, being ſhorteſt at the baſe and longeſt towards the ſummit. When the juices from age have collapſed, or been dried up, the joints appear colorleſs, and filled with minute, ovate, pellucid granules, which I have alſo obſerved in others of the ſpecies that grow out of water. The capſules are diſpoſed at the end of the upright ſhoots without any diſcernible order: ſometimes they are ſolitary, ſometimes in cluſters, and, not unfrequently, two or three may be ſeen apparently iſſuing from each other; in moſt of them a

tranſverſe line is obſervable, at which the capſule divides when at maturity, and the ſeeds eſcape at the orifice.

In drying it adheres, though not very firmly, to either glaſs or paper.

A. C. multicapſularis, natural ſize.
B. Ditto magnified 2.
C. Ditto ditto 1.



Conferva castanea.

W.W. Young del.t

J. Simpkins sculp.t

Published by J.W. Dillwyn, Sept.r 1.st 1806.

CONFERVA CASTANEA.

C. filamentis repentibus ramoſis ſub-bipinnatis imbricatis implexis, pinnis pinnuliſque alternis divaricatis, articulis longis.

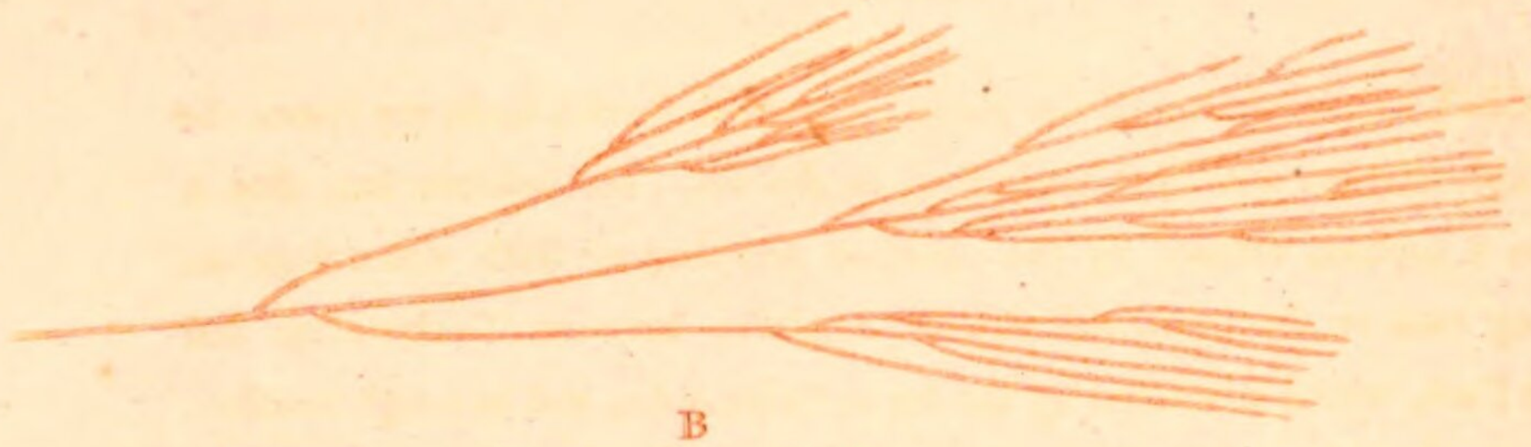
On hedge banks in a lane on a high hill between the Gower and Lougher Roads, about four miles from Swanſea.

THIS ſingular ſpecies is found in great abundance on the ſhady ſide of a lane near Swanſea, and I am not aware of its having been elſewhere met with. It covers ſticks, ſtones, and earth, forming looſe patches of a brown-cheſnut color. The ſtem is creeping, and throws off ſeveral bipinnated decumbent branches, about a quarter or half an inch in length, which moſtly grow over and become entangled with each other; the pinnæ and pinnulæ are regularly alternate, variouſly curved, and iſſue at or nearly at right angles with the ſtem and branches. The diſſepiments are almoſt black: in the principal branches the joints are very long, but they gradually become ſhorter towards the ends of the ramuli No fructification has been diſcovered.

In drying, the joints alternately collapſe, ſo as to give the plant a ſingularly beaded appearance; it adheres but ſlightly to either glaſs or paper.

A. C. caſtanea, natural ſize.
B. Ditto magnified 3.
C. Ditto ditto 1.

A



B

C

Conferva rothii.

W.W.Young del.t

J.Sowerby sculp.t

Published by I.W.Dillwyn, Sep.r 1.st 1806.

CONFERVA ROTHII.

C. filamentis erectis dichotomis brevibus denſiſſimè cæſpitoſis phæniciis; ramis alternis, articulis breviuſculis.

C. Rothii. Turton's Syſtem of Nature, VI. p. 1806.

C. violacea. Roth. Cat. Bot. I. p. 190, t. 4. f. 1. III. p. 224. Fl. Germ. III. pars. 1. p. 525.

On a Rock by the Sea-ſhore on the N. E. Coaſt of Angleſea, between Troſymarian and Penmain Park.—*Rev. Hugh Davies.*

I RECEIVED ſpecimens of the preſent beautiful ſpecies from my friend the Rev. Hugh Davies, who firſt noticed it in Britain. He informs me, that it grows on a tophus, formed by the conſtant dripping of freſh water from an impending rock on the north-eaſt ſide of Angleſea, between Troſymarian and Penmain Park, which is waſhed by the ſea at ſpring-tides, and in rough weather. It appears to have been firſt diſcovered by Dr. Roth, on the piles placed on the ſhore, near Eckwarden, in the Duchy of Oldenburg. He deſcribed it under the name of C. violacea in his Catalecta Botanica, but as Hudſon, in the Flora Anglica, had previouſly taken up a very different plant under that denomination, I have followed Dr. Turton, who, in his Syſtem of Nature, has altered its name to that of C. Rothii, in honor of its firſt diſcoverer.

C. Rothii grows in patches of various ſizes, generally, according to Dr. Roth, affecting an oblong form. The color is a bright red, ſometimes tending to brown, and changing, when dried, to a beautiful ſhining crimſon; the filaments are very ſlender, frequently not more than three lines, and, I believe, never exceeding an inch in length; they are erect, denſely matted together, and much branched; the

branches dichotomous, alternate, and moſt numerous towards the apices; the joints are cylindrical, and their length is about equal to twice their thickneſs; the interſtices pellucid. No fructification has been diſcovered. The Rev. Hugh Davies informs me that he has found this plant both in ſpring and autumn, but that the color is moſt brilliant in the latter ſeaſon.

C. Rothii has a conſiderable affinity to C. ſetacea and C. ſtricta, but to the naked eye its much ſmaller ſize, and, when magnified, the ſhortneſs of its joints will readily diſtinguiſh it from both theſe ſpecies

In drying it adheres to either glaſs or paper.

A. C. Rothii, natural ſize.
B. Ditto, magnified 3.
C. Ditto ditto 1.

CONFERVA VESICATA.

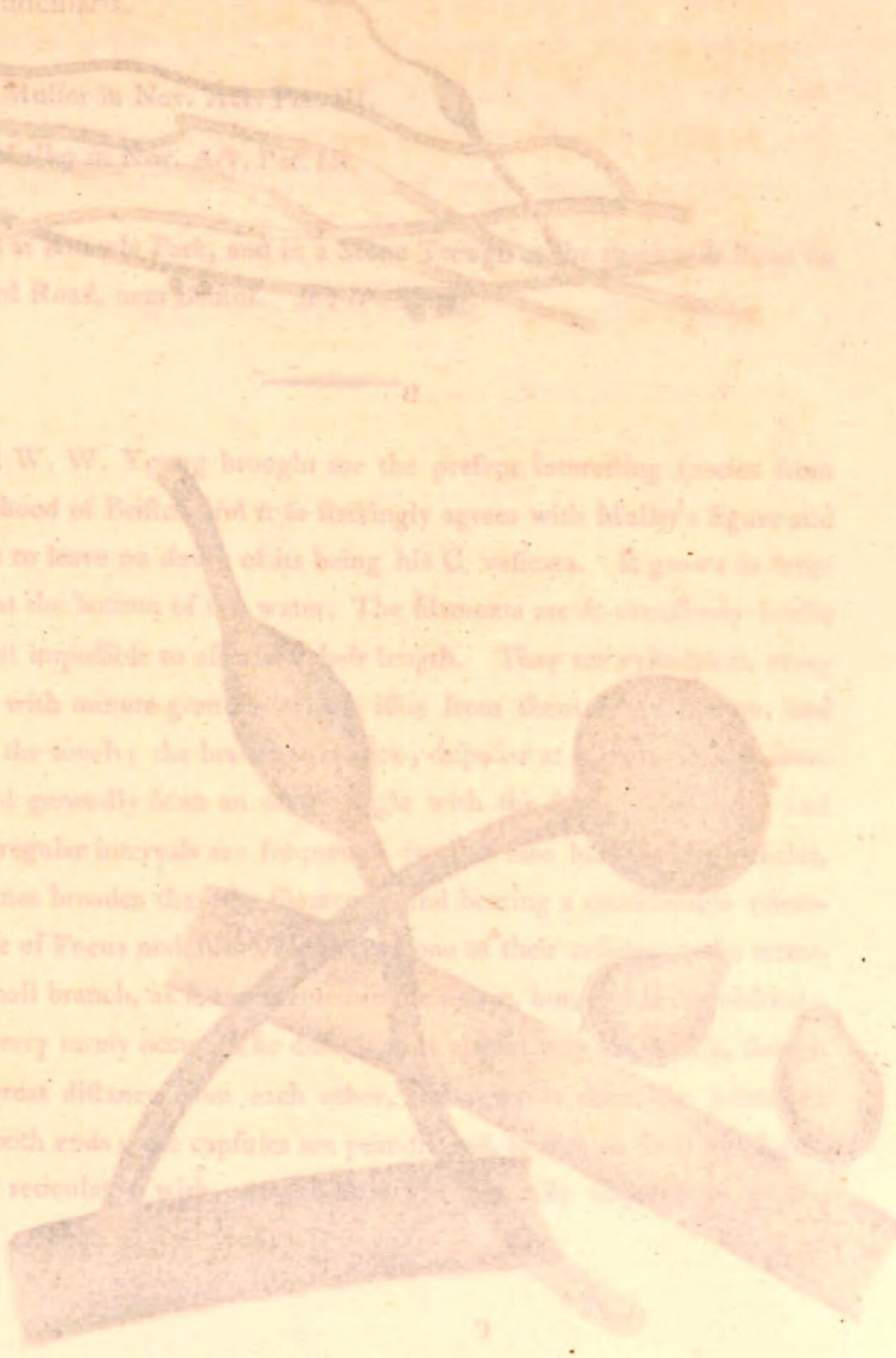
C. filamentis ramosis sub-articulatis, rigidis, vesicula laxaque tolliformis ellipticis, filamento bicaudatis, capsulis sphæroideis pyriformibus, bre-viter pedunculatis.

C. vesicaria. Mueller in Nov. Act. Petropol.

C. barbata. Mueller in Nov. Act. Pet. 19.

In Fifth Pond at Penwith Park, and in a stone pit on the north side of the Pendeford Road, near Bilston.

MY Friend W. W. Young brought me the prefixed interesting species from the neighbourhood of Bilston, and it so flatteringly agrees with Malby's figure and description, as to leave no doubt of its being the C. vesicaria. It grows in the bottom of the water. The filaments are so extremely long that it is almost impossible to ascertain their length. They are [illegible] where thrilled with minute green [illegible] filling from them, [illegible] very rough to the touch; the branches, dispersed at [illegible] each other, and generally form an [illegible] with the [illegible] branches at irregular intervals are frequently [illegible] four or five times broader than [illegible] and bearing a [illegible] blance to those of Fucus nodosus [illegible] of their [illegible] bifurcation of a small branch, at [illegible] I believe that very rarely [illegible] always at a great distance [illegible] each other. [illegible] contracted at both ends [illegible] capsules are peari[illegible] and delicately reticulated [illegible]



A

B

C

Conferva vesicata.

W. W. Young del.

J. Sowerby sculp.

Published by L. W. Dillwyn, Sept.r 1.st 1806.

CONFERVA VESICATA.

C. filamentis ramosis sub-articulatis, rigidis, vesiculis innatis solitariis ellipticis, filamento latioribus, capsulis subdidymis pyriformibus, breviter pedunculatis.

C. vesicata. Muller in Nov. Act. Pet. III.

C. bursata? Muller in Nov. Act. Pet. III.

In Fish Ponds at Knowle Park, and in a Stone Trough at the three mile stone on the Pensford Road, near Bristol. *W. W. Young.*

MY Friend W. W. Young brought me the present interesting species from the neighbourhood of Bristol, and it so strikingly agrees with Muller's figure and description, as to leave no doubt of its being his C. vesicata. It grows in large bushy masses at the bottom of the water. The filaments are so excessively brittle that it is almost impossible to ascertain their length. They are cylindrical, every where stuffed with minute granules which issue from them when broken, and very rough to the touch; the branches are few, disposed at a great distance from each other, and generally from an obtuse angle with the stem. The stems and branches at irregular intervals are frequently swollen into bladder-like vesicles, four or five times broader than the filaments, and bearing a considerable resemblance to those of Fucus nodosus. I observed one of their vesicles at the termination of a small branch, as is represented in the figure, but, as Muller observes, I believe these very rarely occur. The dissepiments appear very irregularly, though always at a great distance from each other, and towards them the joints are contracted at both ends; the capsules are pear-shaped, lateral, on short footstalks, and delicately reticulated with nerves; they are generally disposed in pairs;

theſe capſules frequently occur on branches where no veſicles are diſcernible, and the plant then conſiderably reſembles C. burſata of Muller, which my friend D. Turner and myſelf found many years ago near Yarmouth, and which poſſibly may not be a diſtinct ſpecies.

C. veſicata agrees ſo nearly in the nature of the filament, in its ramifications and joints with C. amphibia in an old ſtate, that I think it rather doubtful whether future obſervations may not prove it to be only a variety of that plant. Its brittleneſs, and rigidity, and under the microſcope its ſingular veſicles will, however, readily diſtinguiſh it, and I have therefore thought it beſt, and the moſt certain way of avoiding future confuſion, to follow Muller, and publiſh it as a ſeparate ſpecies.

In drying it adheres very ſlightly to either glaſs or paper.

A. C. veſicata, natural ſize.
B. Ditto magnified 4.
C. Ditto ditto 1.

Conferva fucoides.

W.W. Young del.t

J. Simpkins sculp.t

Published by I.W. Dillwyn, Sept.r 1.st 1806.

CONFERVA FUCOIDES.

C. filamentis ſub-cartilagineis ramoſiſſimis; ramulis dichotomis, diſſepimentis ex venarum anaſtomoſibus, articulis breviuſculis ſtriatis, capſulis ovatis ſub-ſeſſilibus.

C. fucoides. Fl. Ang. p. 603. With. IV. p. 141.

Ceramium violaceum. Roth. Cat. Bot. I. p. 150. III. p. 151. Fl. Germ. III. pars. 1. p. 462.

On Rocks and Stones in the Sea frequent.

AMONG the Confervæ few are ſo little known as the black marine ſpecies, which may be principally attributed to the ſhortneſs of Hudſon's deſcriptions, to his not having had any figures to which he could refer, and to the unfortunate deſtruction of his Herbarium. The difficulty in the preſent ſpecies has been removed by the kindneſs of my friends the Rev. Hugh Davies and Archibald Menzies, who, from among ſome authentic ſpecimens which they fortunately poſſeſs, have obligingly ſpared me two pieces marked 'C. fucoides' exactly correſponding with the plant here figured, as indeed does the deſcription in the Flora Anglica with ſome of the numerous appearances which it aſſumes in different ſituations and periods of its growth.

C. fucoides varies from two or three inches to a foot in length; its mode of growth is remarkably thick and buſhy; the color in the young plant is of a reddiſh-brown, becoming darker, and almoſt black with age; the root is a callus common to two or three irregular branched ſtems; the ſtem and main branches when the plant has arrived at maturity are in a conſiderable degree tough and horny; towards the ends they are repeatedly dichotomous; the diſſepiments, as

in C. byſſoides, appear to be formed by the arching over of the veins or nerves which are very obvious in the joints; the length of the joints varies; in the ſtem and principal branches it is three times their diameter, to which, in the ultimate ramuli, it is hardly more than equal; the capſules are ovate, either terminal or lateral; they are moſtly ſeſſile, but very ſhort fruit-ſtalks are ſometimes obſervable.

In drying it adheres but ſlightly to either glaſs or paper.

A. 1. 2. C. fucoides, natural ſize.

3. An old ſpecimen of the ſame, natural ſize.

B. C. fucoides, magnified 4.

C. Utimate Ramuli with Capſules, magnified 1.

DECEMBER 1, 1806.

FASCICULUS 11,

Price 5 s.

OF A

SYNOPSIS

OF THE

BRITISH CONFERVÆ,

CONTAINING

SIX HIGHLY MAGNIFIED DRAWINGS,

COLOURED FROM NATURE;

WITH DESCRIPTIONS.

By LEWIS WESTON DILLWYN, F.R.S. & F.L.S.

LONDON:

PRINTED AND SOLD BY PHILLIPS AND FARDON,
GEORGE-YARD, LOMBARD-STREET.

1806.

Conferva curta.

W W Young del.

Published by L.W. Dillwyn, Dec 1.st 1806.

J. Sowerby

CONFERVA CURTA.

C. filamentis cœſpitoſis ſimplicibus, ſub-cartilagineis, erectis brevibus utrinque attenuatis; diſſepimentis pellucidis parum contractis; articulis breviuſculis.

In the Sea, paraſitical on Fuci, not unfrequent at Swanſea.

THIS ſmall ſpecies, though it does not appear to have been heretofore noticed, is frequently to be met with on the ſhore at Swanſea, and I have reaſon to believe that it is far from rare in other parts of the kingdom. It grows paraſitically on Fuci, and forms roundiſh tufts ſo ſhort and ſtiff that they may be readily paſſed over as the remaining ſtumps of a paraſite, the greater part of whoſe filaments have been beaten off by the action of the waves. The color is a browniſh olive; the length, I believe, is ſeldom more than three or four lines. The filaments are ſimple; towards the root they are very ſlender, but become thicker as they approach the middle, and then again taper ſlightly towards their apices, which are rounded off and blunt. The diſſepiments are pellucid, and divide the filament into joints, whoſe length does not much exceed their thickneſs. No fructification has been diſcovered.

C. curta differs from C. fucicola, with which alone it can be at all confounded in the ſubſtance and color of the filaments: in the former they are rather of a horney nature and of an olive-brown color; the latter are remarkably flaccid and the color is more of a muddy yellow; the length and ſhape of the filaments are alſo materially different.

In drying it adheres to both Glaſs and Paper.

A. C. curta, natural ſize.
B. Ditto, magnified 3.
C. Ditto, ditto 1.

CONFERVA CURTA.

C. filamentis ceriptoris fragilibus, fub-articulatis, crefcis brevibus nitidque atrovirentibus; diffepimentis pellucidis parum contractis; vaginis brevifculiis.

In the Sea, parafitical on Fucs, not unfrequent at Swanlea.

THIS fmall fpecies, though it does not appear to have been heretofore noticed, is frequently to be met with on the fhore at Swanlea, and I have reafon to believe that it is far from rare in other parts of the kingdom. It grows parafitically on Fucs, and forms remarkably tufts, fo fhort and fill that they may be readily paffed over as the remaining ftumps of a parafite, the greater part of whole filaments have been loften off by the action of the waves. The colour is a brownifh olive; the length, I believe, fcarcelyexceeds three or four lines. The filaments are fimple; towards the root they are very fmaller, but become thicker as they approach the middle, and then again taper flightly towards the apices, which are rounded off and blunt. The diffepiments are pellucid, and divide the filament into joints, whofe length does not exceed their diameters. No fructification has been difcovered.

C. curta differs from C. fcopulorum, with which alone it can be at all confidered in the fubftance and color of its filaments; in the former they are rather of a horney nature and of an olive-black color, the latter are remarkably flexed and the color is more of a muddy yellow; the length and ftage of the filaments are alfo materially different.

In drying it adheres to both Clay and Paper.

A. C. curta, natural fize.
B. Ditto, magnified 5.
C. Ditto, ditto 1.

A

B

Conferva velutina.

W.W. Young del.

Published by I.W. Dillwyn, Dec. 1st 1806.

CONFERVA VELUTINA.

C. filamentis repentibus ramosis implexis, ramis erectis sub-secundis, curvatis, obtusis, articulis longis.

C. velutina. Eng. Bot. t. 1556.

C. varia. Roth. Cat. Bot. III. p. 301 ?

Byssus velutina. Linn. Sp. Pl. p. 1638. Fl. Ang. p. 605. Fl. Scot. p. 1001. With. IV. p. 144. Weis Crpy. p. 12. Roth. Fl. Germ. III. pars. 1. p. 562.

Byssus tenerrima viridis, velutum referens. Dill. Musc. p. 7. t. 1. f. 14. Ray. Syn. p. 36.

Byssus terrestris viridis herbacea & mollissima, filamentis ramosis et non ramosis. Mich. Gen. p. 211. t. 89. f. 5.

On the ground in moist and shady places.

C. VELUTINA grows most frequently on moist shady banks, and I believe is not uncommon in such situations during the winter months and in the early part of spring. It covers the ground with densely matted patches, of a light or yellowish green color, and frequently four or five inches in diameter. The filaments extend to a great length, throwing out roots below and branches from the upper side; these branches are short, erect and matted together, so as to bear a fancied resemblance to the pile of velvet from which the plant has derived its specific name. The branches are again twice or thrice divided with ramuli, for the most part disposed on the same side of the branch, but sometimes alternately; they are more or less curved and blunt at the apices. In the repent stem and principal branches the dissepiments are hardly discernable; the joints vary in length from twice to six or eight times their thickness. Michæli's figure affords good reason

for believing that the fructification resembles that of *my** C. frigida figured at Plate 16, but I have not been able to discover it.

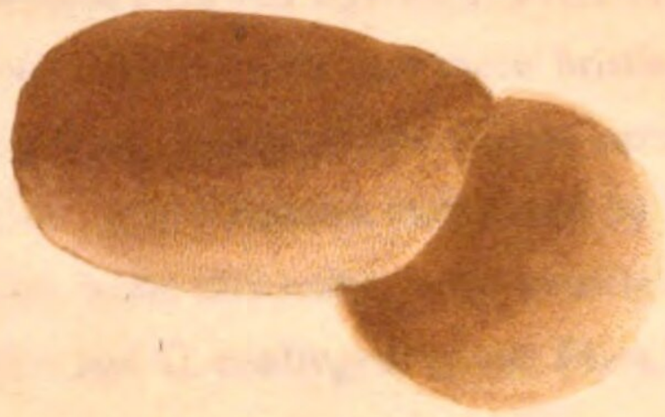
C. umbrosa of Roth, figured at Plate 61 of this work, differs from C. velutina in its much darker color and more brittle nature. I however strongly suspect that it is a variety only of this species occasioned by its growth in a colder and boggy soil. The Conferva introduced by Dr. Roth in his Catalecta and Flora Germanica under this name, is an entirely different species, and is the C. violacea of Hudson and C. confragosa of the Flora Scotica.

In drying C. velutina adheres to both Glass and Paper.

A. C. velutina, natural size.

B. Ditto magnified 1.

* I may take this opportunity to observe that the plant which I have figured under that name is not the C. frigida of Roth. Drs. Mohr and Weber, in their German edition of this work, first corrected the error, and their correction is confirmed by the 3d vol. of the Catalecta Botanica lately published. The species which I erroneously figured under that name is there described with the name of Ceramium Dillwynii.



A

B

Conferva pallida.

W. W. Young del.

Published by E. W. Dillwyn, Swansea Oct. 1.

CONFERVA PALLIDA.

C. filamentis dichotomis, curvato-flexuosis, fastigiatis dichotomiarum angulis rotundis, articulis longissimis.

On Yellow Ochre in Isinglass size.

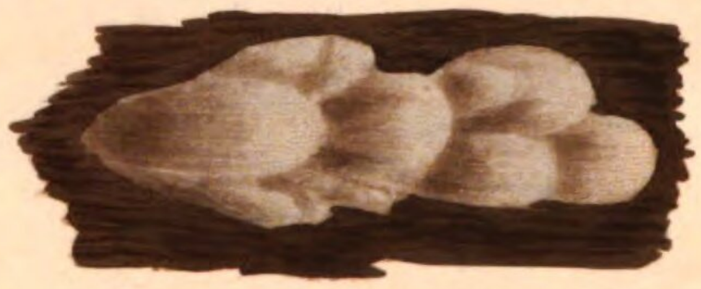
MY friend W. W. Young, having let some yellow ochre remain about a fortnight in a pot of isinglass size, found the surface of the ochre nearly covered by the present minute and interesting Conferva.

The color is of a light yellowish brown: the filaments are considerably finer than the smallest human hair, and are matted together into dense leathery masses, generally about an inch in length and of the thickness of a shilling; they are much branched with repeated dichotomics of which the angles are uniformly rounded; the branches are singularly flexuose and curved all nearly of the same length, and blunt and of a lighter color at the summits: the length of the joints is irregular, in the ultimate branches they are equal to eight or ten times the diameter, and in the main branches are generally much longer. I have not been able to discover any fructification.

It appears from the description in the Catalecta Botanica to be nearly allied to Roth's Conferva fastigiata, but in that species the angle of the dichotomy is said to be acute, and the joints very short and somewhat beaded.

In drying it adheres to both Glass and Paper.

A. C. pallida, natural size.
B. Ditto, magnified 1.



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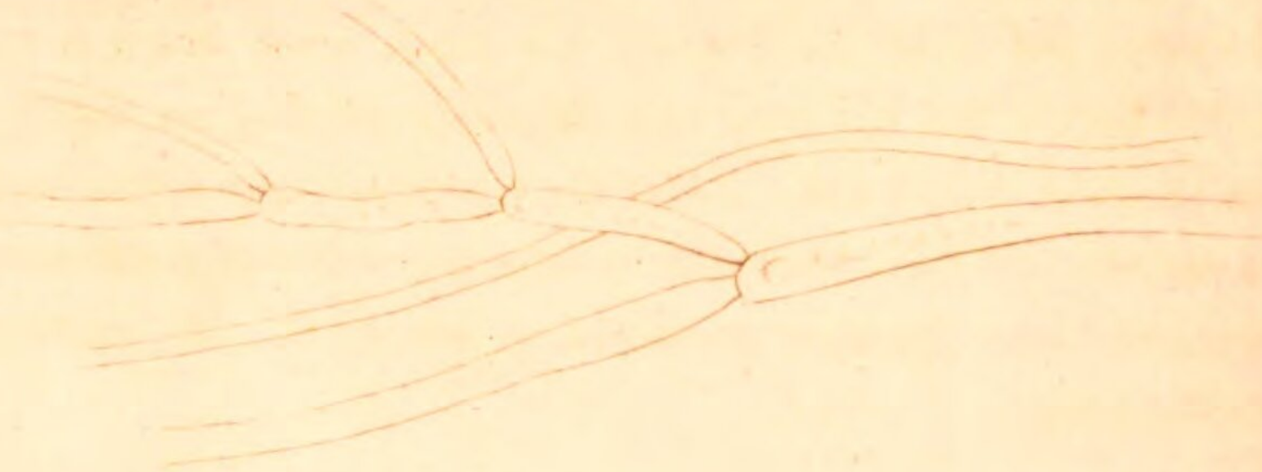


B

Conferva lactea.

W.W. Young del.

J. Simpkins sc.

Published by J.W. Dillwyn Dec. 3rd 1806.

CONFERVA LACTEA.

C. filamentis ramosissimis, gelatinosis, lubricis; ramis virgatis alternis e quovis dissepimento; dissepimentis contractis; articulis longissimis, hyalinis.

C. lactea. Roth. Cat. Bot. I. p. 216. III. p. 292.

C. pusilla. Fl. Germ. III. pars. 1. p. 524.

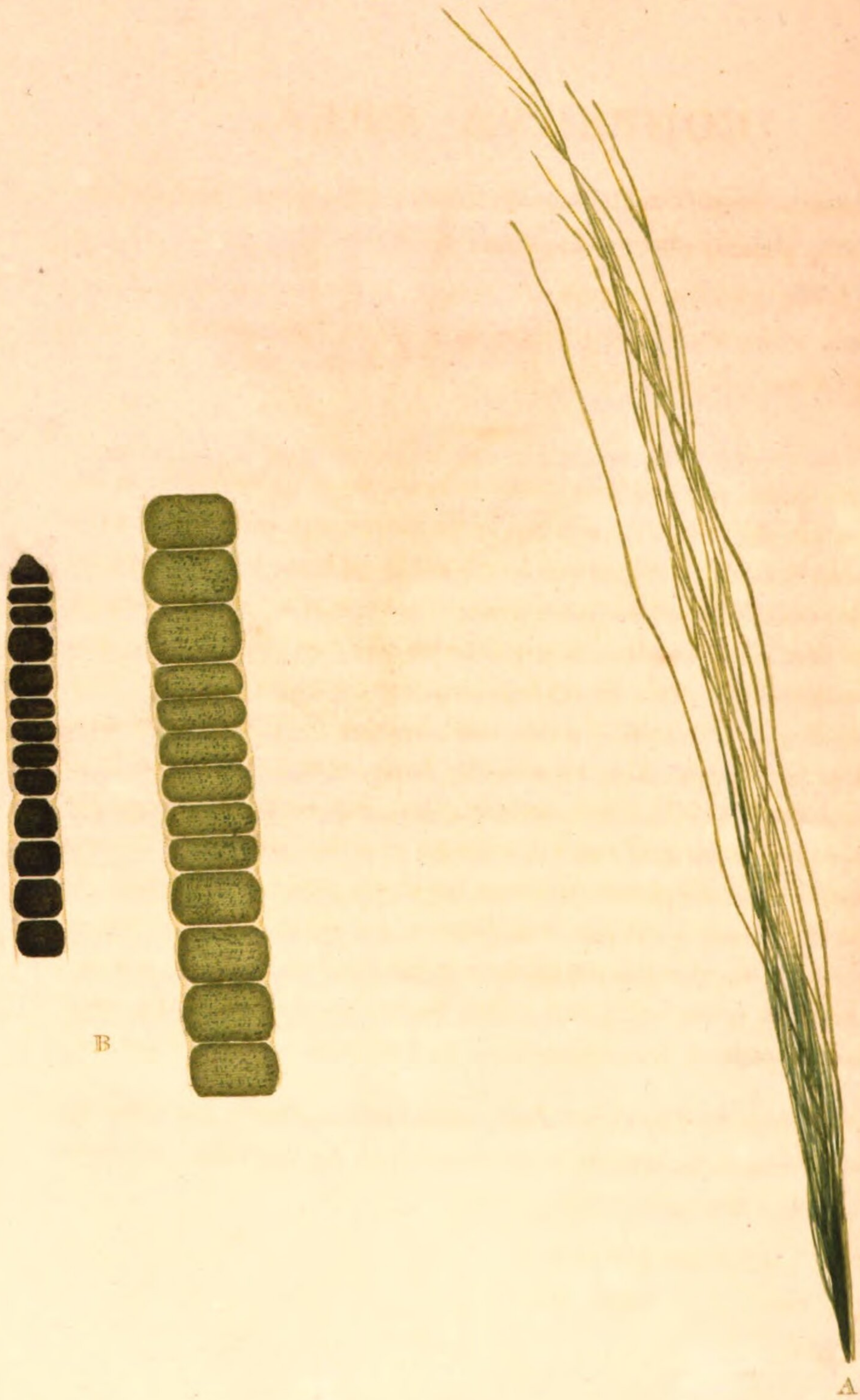
In Ditches and Rivulets, growing on Stones, Wood, decaying vegetables, &c.

I HAVE found the present species in several places in Walthamstow and its neighbourhood, as also about Swansea, and I am inclined to think it is by no means unfrequent during the winter months. It grows on various substances at the bottom of ditches and rivulets, in gelatinous slippery masses, of a dirty white color, and varying from half an inch to three or four inches in length. The filaments are regularly branched at each dissepiment; the branches are alternate and so clustered as to give them a brush-like appearance. The dissepiments are of a dusky color, and divide the filaments into joints, whose length is various but never less than at least ten times their thickness, and they are slightly contracted and rounded at each end. Under the microscope they appear perfectly colorless, and this and their remarkable transparency will readily distinguish C. lactea from every other species with which I am acquainted. No fructification has been discovered.

In drying it adheres firmly to both Glass and Paper.

A. C. lactea, natural size.

B. Ditto, magnified 1.



Conferva ærea.

W. W. Young del.

J. Houghton sculp.

Published by I. W. Dillwyn, Dec 2nd 1806.

CONFERVA ÆREA.

C. filamentis ſimplicibus rigidiuſculis ſtrictis; diſſepimentis hyalinis contractis, articulis oblongis brevibus.

On Stones in the Sea at Cromer, *D. Turner*. At the entrance of Laugharne Harbor; at Iſmael's Ferry, and other parts of the Carmarthenſhire Coaſt, *W. W. Young*. About Swanſea.

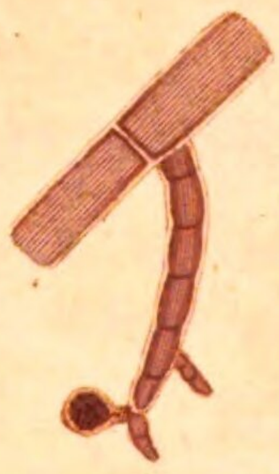
THIS ſpecies, which hitherto appears to have eſcaped the obſervation of any author, was, above four years ago, ſent by Dr. Goodenough to D. Turner, under the name of *C. Ærea*, and has ſince been found by my friend W. W. Young on ſeveral parts of the Coaſt of Carmarthenſhire; nor is it by any means unfrequent on the ſhore about Swanſea. Several filaments iſſue from the ſame root; they vary conſiderably in ſize. At the beginning of the winter before laſt I found one nearly of the thickneſs of a crow quill, but they are moſt generally about equal to large thread. They are invariably ſimple: their length is from ſix to fifteen inches; the color a dark or bluiſh green; they are brittle and rigid like C. capillaris, but not at all curled or entangled as in that ſpecies; the filaments contracted at the diſſepiments, which are remarkably pellucid and colorleſs; the length of the joints is leſs than their diameter, and two together often appear, whoſe united length is preciſely the ſame as that of one of the others, as if they had originally formed only a ſingle joint; they are rounded at each end, which gives the filament its beaded appearance. No fructification has been diſcovered.

When dried the filament aſſumes a more cylindrical form, and under the higher powers of the microſcope longitudinal fibres are obſervable. It adheres but ſlightly to either glaſs or paper.

A. C. concatenata, natural ſize.
B. Ditto magnified 2.

A

B



C

Conferva tetrica.

W. W. Young del.

J. Sowerby sculp.

Published by L. W. Dillwyn, Decr. 1st 1806.

CONFERVA TETRICA.

C. filamentis decompoſito-pinnatis, pinnis pinnuliſque alternis, extremis curvatis; articulis longiuſculis, capſulis ſub-ſolitariis globoſis pedunculatis.

On Fuci and on Rocks in the Sea. Common about the Mumbles and in other parts of the Peninſula of Gower.

C. TETRICA is extremely plentiful in the pools left by the tide on the coaſts of the peninſula of Gower, where it grows either on the rocks or paraſitically on the larger fuci. The root is a ſmall callus from which ſeveral ſtems ariſe, forming thick entangled bundles of a dull or browniſh red color, wholly devoid of gloſs, and frequently attaining the length of ſix or eight inches. The principal ſtem in thickneſs is about equal to horſe hairs. The primary ſhoots are diſpoſed without much obſervable order and of unequal lengths; they are winged with alternate branches, which are again pinnated with others alſo regularly alternate, and theſe are beſet with ſhort curved ramuli, of which the length is variable but always ſhort in compariſon with that of the other branches. The joints are cylindrical; their length in the principal branches is at leaſt equal to thrice their thickneſs, but it is much leſs in the ſmaller ones. The capſules, of which ſeldom more than one occurs on any of the ramuli, are globoſe, and placed on a ſhort penduncle.

Although this plant ſo ſtrikingly differs in its greater ſize and appearance in almoſt every reſpect from C. roſea, yet it is not eaſy to find a ſpecific difference when examined with the aſſiſtance of a microſcope. The principal difference is then obſervable in the ultimate ramuli and in the diſpoſition of the capſules; the former in C. roſea are of regular lengths and truly pinnated; in C. tetrica they are again divided with ſhort curved and ſomewhat ſpine-like ramuli. In C. roſea

the capſules are numerous, ſeſſile, and regularly arranged on the upper ſide only of the pinnulæ, but in this plant they are on ſhort footſtalks, and ſeldom more than one is found on each ramulus, and that at or near its ſummit. The joints in the principal branches are alſo longer than C. roſea.

In drying C. tetrica does not adhere firmly to either Glaſs or Paper.

A. C. tetrica, natural ſize.
B. Ditto, magnified 3.
C. Ditto, ditto 1.

Phyl 89

MARCH 1, 1807.

FASCICULUS 12,

Price 5 s.

OF A

SYNOPSIS

OF THE

BRITISH CONFERVÆ,

CONTAINING

SIX HIGHLY MAGNIFIED DRAWINGS,

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By LEWIS WESTON DILLWYN, F.R.S. & F.L.S.

LONDON:

PRINTED AND SOLD BY PHILLIPS AND FARDON,
GEORGE-YARD, LOMBARD-STREET.

1807.

Conferva setacea.

W. W. Young del.

J. Simpkins sculp.

Published by L. W. Dillwyn, March 1st 1807.

CONFERVA SETACEA.

C. filamentis sub-dichotomis, fasciculatis, strictis, virgatis, lubricis, ramis articulisque cylindraceis longissimis; fructu laterali pedunculato.

C. setacea. Fl. Ang. p. 599. With. IV. p. 137. E. Bot. XXIV. p. 1689.

C. marina gelatinosa, corallinæ instar geniculata tenuior. Dill. musc. p. 33. t. 6. f. 37. Turn. Tr. of Linn. Soc. VII. p. 107.

Corallina confervoides gelatinosa rubens, ramulis et geniculis peranguſtis, R. Syn. p. 34.

On Rocks and Stones in the Sea, not unfrequent at the latter end of Summer and beginning of Autumn.

C. SETACEA has been observed on most if not all of our shores, though in some it is much more plentiful than on others. Where it inhabits it is almost impossible it should be overlooked, as its rich color must attract the notice even of the most incurious observer. It constantly grows in thick bundles, seldom exceeding four or five inches in length. The root is a small callus and gives rise to a number of rich crimson filaments, generally more or less tinged with purple; they are branched with repeated dichotomies, the angles whereof are uniformly acute; the ultimate branches are long; the joints cylindrical; their length, especially in the main stem, generally eight or ten times their breadth, and every where much longer than in any of its congeners. We are informed in Withering, on the authority of Col. Velley, that the fructification is in globular

clusters on short lateral pedicles, but I* have never been so fortunate as to meet with it. Col. Velley adds that it is rarely found.

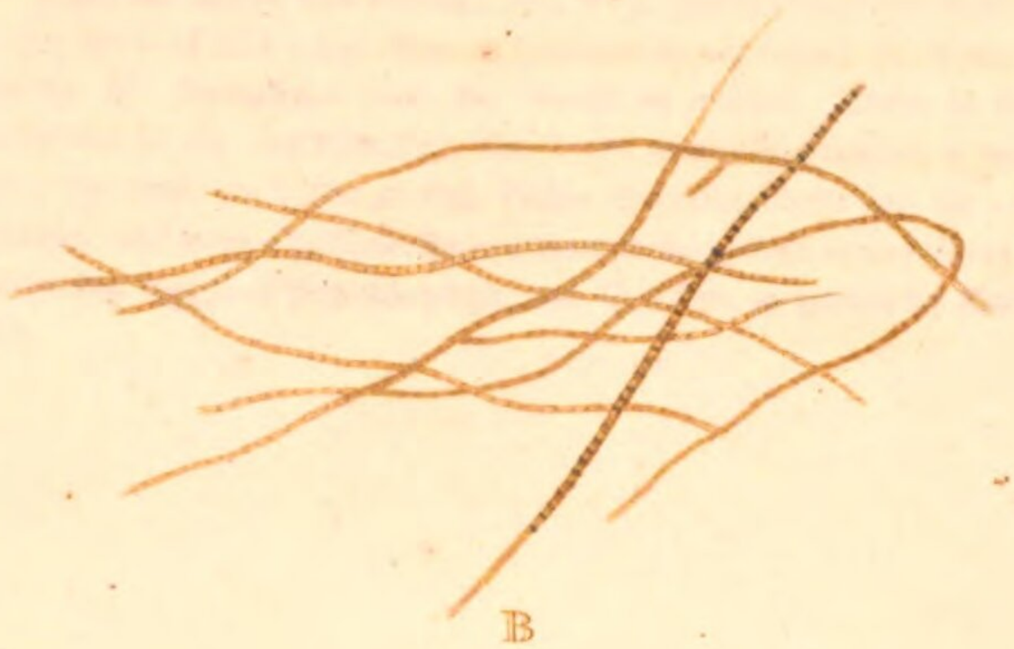
The only two species which can possibly be confounded with C. setacea are C. corallina and C. stricta; from the former it differs in its more slender filaments and cylindrical joints; while its much less numerous branches, far longer joints, veinless filaments, smaller size, and brighter color, will readily distinguish it from the latter.

When this plant is placed in fresh water, a scarlet liquor oozes from the joints; in drying it adheres to both glass and paper. The colour is remarkably fugitive; it changes from exposure to the air to a dirty orange.

A. C. setacea, natural size.
B. Ditto, magnified 4.
C. Ditto, magnified 3.
D. Part of a fruit-bearing specimen, natural size.
E. Portion magnified 2.
F. Seeds magnified 1.

* Since the above was written, Mr. W. J. Hooker has been so kind as to favor me with a sketch of the fruit of this plant from a specimen in my friend D. Turner's collection, communicated to him by Mr. Templeton from the North of Ireland. There is something so extraordinary and anomalous in the fructification, that I am unable to compare it with that of any other submersed alga; the seeds are borne as Col. Velley describes them, but do not appear to be contained in a tubercle, and have a pellucid limbus more striking than in any fucus I am acquainted with. Mr. H. Davies has suggested that this plant, not C. rubra, as quoted by Hudson, is the true C. flosculosa of Ellis.

A



B

Conferva hyphloderma.

W. W. Young del.

J. Singleton sculp.

Published by I. W. Dillwyn, March 1st 1807.

CONFERVA TYPHLODERMA.

C. filamentis ſub-ramoſis, denſiſſimè implexis, diſſepimentis obſcuris, articulis brevibus.

In Water which contained a Solution of Gum Dragon.

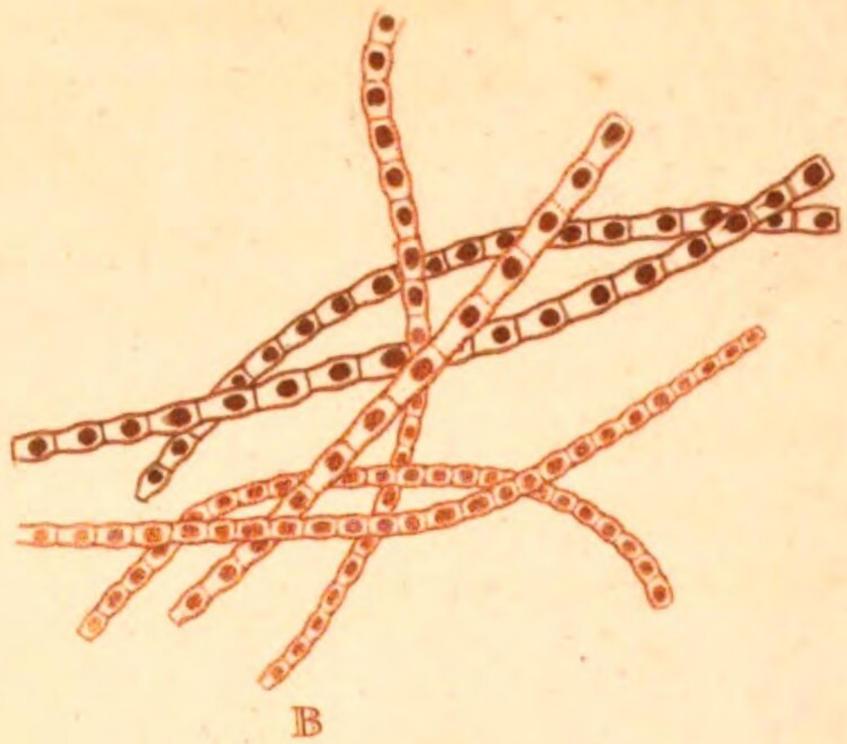
THE preſent Conferva was diſcovered by my friend William Weſton Young, in a bottle containing a ſolution of gum dragon in water, the ſurface of which it covered with a maſs of filaments ſo denſely interwoven as to form a cartilaginous film about two lines in thickneſs, and bearing a conſiderable reſemblance to the ſkin of a mole.

Their extreme tenuity and entangled growth makes it impoſſible to aſcertain the length of the filaments, which are generally ſimple, but a branch may be here and there obſerved—their color is a dull olive green. The diſſepiments are readily diſcernable, and are of a darker color than the reſt of the filaments, which they divide into joints, whoſe length is nearly but not quite equal to their thickneſs. No fructification has been diſcovered.

In drying it adheres firmly to both Glaſs and Paper.

A. C. typhloderma, natural ſize.
B. Ditto, magnified 1.

A



B

Conferva carnea.

W.W. Young del.

J. Stephan sculp.

Published by I. W. Dilwyn, March 1st 1807.

CONFERVA CARNEA.

C. filamentis ſimplicibus cæſpitoſis, ſub-nodoſis, carneis; articulis breviuſculis utrinque attenuatis; ſuccus in globulos ſolitarios congeſtus.

On Conferva in the River near Loughor, Glamorganſhire. *W. W. Young.*

IN September, 1805, Mr. Young brought me the preſent delicate ſpecies from the rocks in the Loughor river, where he gathered it, near to its confluence with the ſea. It grows on other confervæ, in looſe tufts, moſtly from a quarter to half an inch in length, and of a pale red or fleſh color. The filaments are ſimple, and taper in ſome degree both towards their root and apex, but terminate rather bluntly. The diſſepiments are of a dark color, and at regular diſtances from each other; the length of the joints in ſome filaments is about equal to twice their diameter; and in others the length and diameter are nearly equal. They are rounded off at both extremities, and moſt ſwollen towards the upper, ſo that when examined under the higher powers of the microſcope they bear ſome reſemblance to thoſe of Corallina officinalis. Among a number of young and apparently vigorous ſpecimens which Mr. Young examined, while they were quite freſh, he could not find one joint through which the juices were entirely diffuſed, and of which the greater part was not colorleſs, ſo as to induce him to believe that the red globules, of which one appears in each joint, are not the effect of a collapſion of the juices from age or expoſure to air, but natural to the plant in its moſt perfect ſtate; in ſome ſpecimens however which I examined when nearly freſh, I found that in the older filaments the red ſpot was conſiderably ſmaller in proportion to the ſize of the joint than in the younger ones, and I therefore preſume that they proceed entirely from a collapſion of the juices, which probably takes place in this more quickly than in moſt other ſpecies. I have not been able to diſcover the fructification.

There is no danger of its being confounded with any other ſpecies.

In drying it adheres to both glaſs and paper.

A. C. carnea, natural ſize.

B. Ditto, magnified 1.

Conferva arbuscula.

W. I. H. del.t

J. Sowerby sculp.t

Published by L. W. Dillwyn, March 1st 1807.

CONFERVA ARBUSCULA.

C. filamentis primariis incraſſatis, inarticulatis, infernè denudatis, ſupernè ramoſiſſimis; ramulis confertis, ſubverticillatis, abbreviatis, ramoſis, articulatis; articulis cylindraceis brevibus.

On ſubmerſed calcareous Rocks near Ballycaſtle, North of Ireland, *Mr. Brown.* Bantry Bay, *Miſs Hutchins.*

AMONG the various additions that have of late years been made to the liſt of Britiſh Confervæ, there is probably no ſpecies more beautiful or intereſting than the preſent, which was diſcovered by Mr. Brown, ſo long ſince as 1800, in the habitat above mentioned. I find no traces of it in the works of any botanical writer upon the genus, nor have I ever met with any ſpecimens beſides thoſe gathered by Mr. Brown, (to whom I am indebted for that here figured) except a ſingle one found by Miſs Hutchins, and preſerved in the beautiful collection of my friend, Dr. Scott, of Dublin.

The root of C. arbuſcula is, like that of moſt other ſpecies, a ſmall callous diſk, from which the filaments, as far as I have ſeen, ariſe in general ſingly. Their height is about three or four inches. The leading ſhoot, or ſtem, (if I may uſe the expreſſion) is as thick as packthread; nor, either in this, or the principal branches, have I been able to detect any traces of joints. It is naked and undivided near the root, at a ſhort diſtance from which it throws out branches, diſpoſed without any regular order, and much more cloſely arranged in ſome ſpecimens than in others, the lower ones generally longeſt, and the reſt gradually ſhorter, ſo as to give the whole plant an irregularly ovate outline. Theſe branches are, like the ſtem, naked near their baſe, and either ſimple or again divided, cloſely beſet towards their apices with extremely ſhort cluſtered

ramuli, diſpoſed in a ſubverticillate manner, irregularly branched, and very viſibly jointed, with cylindrical joints, of which the length is about equal to the diameter. The colour of this ſpecies when freſh appears to be a beautifully deep-red brown; when dry it turns to a very dull brown, tinged with green, wholly devoid of gloſs; and the plant at firſt ſight more reſembles a battered ſpecimen of C. ſpongioſa infeſted with ſome minute paraſite than any other Conferva. It adheres either to paper or glaſs.

The ſpecific name of this plant was given by Mr. Brown, and is excellently deſcriptive of its mode of growth and general habit, which are not unlike that of many ſpecimens of Hypnum alopecurum. T.

A. Conferva arbuſcula, natural ſize.

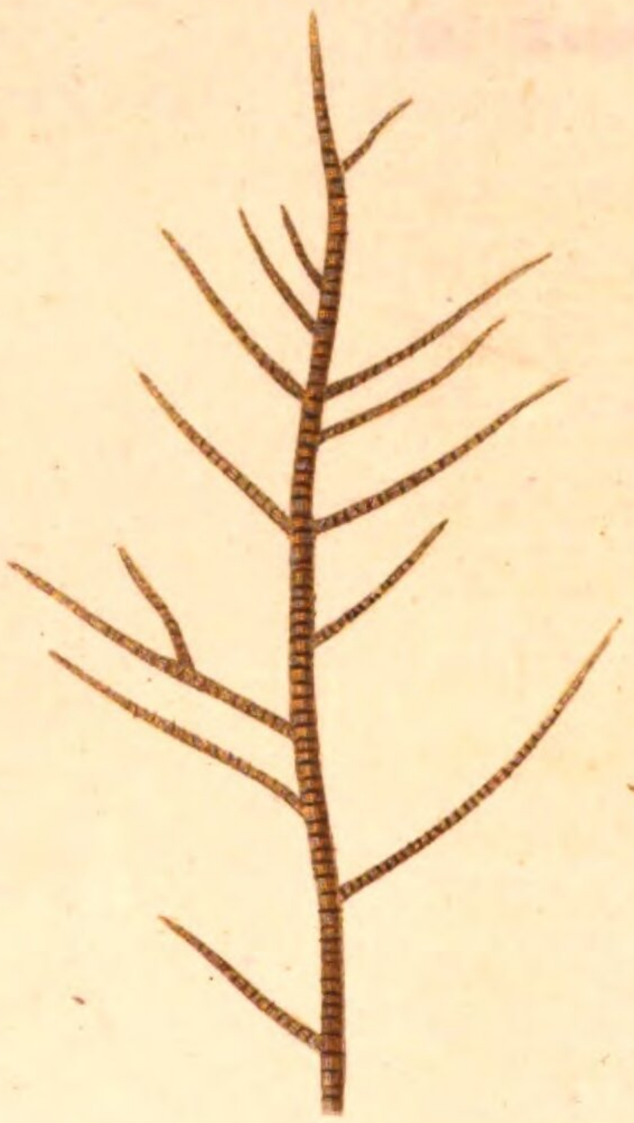
B. Summit of a branch, magnified 5.

C. Portion of ditto 4.

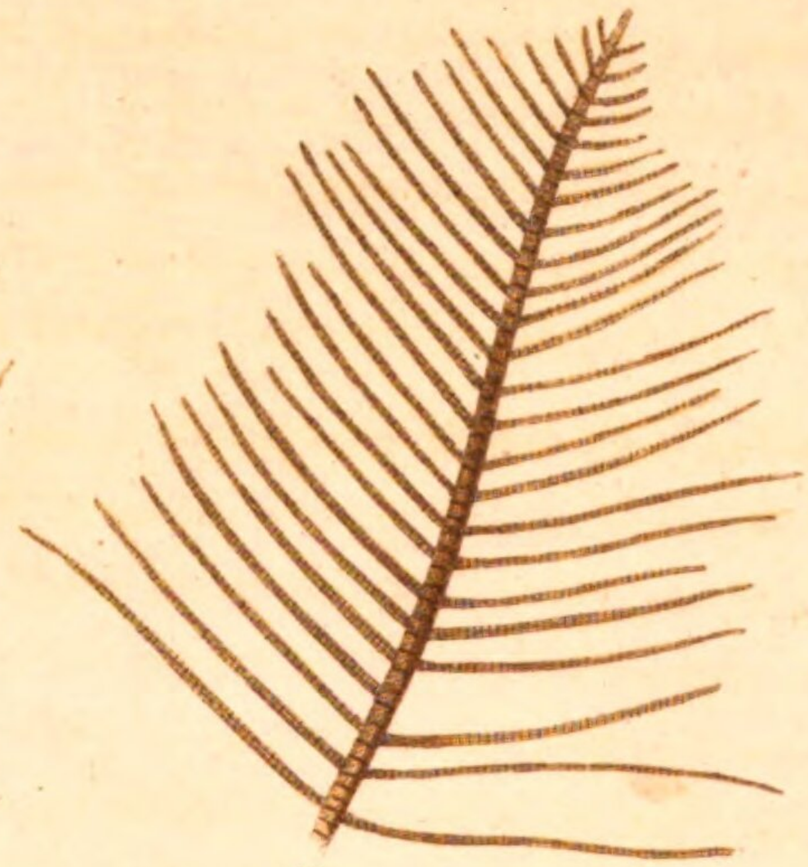
D. Ramulus 1.

A

E



C



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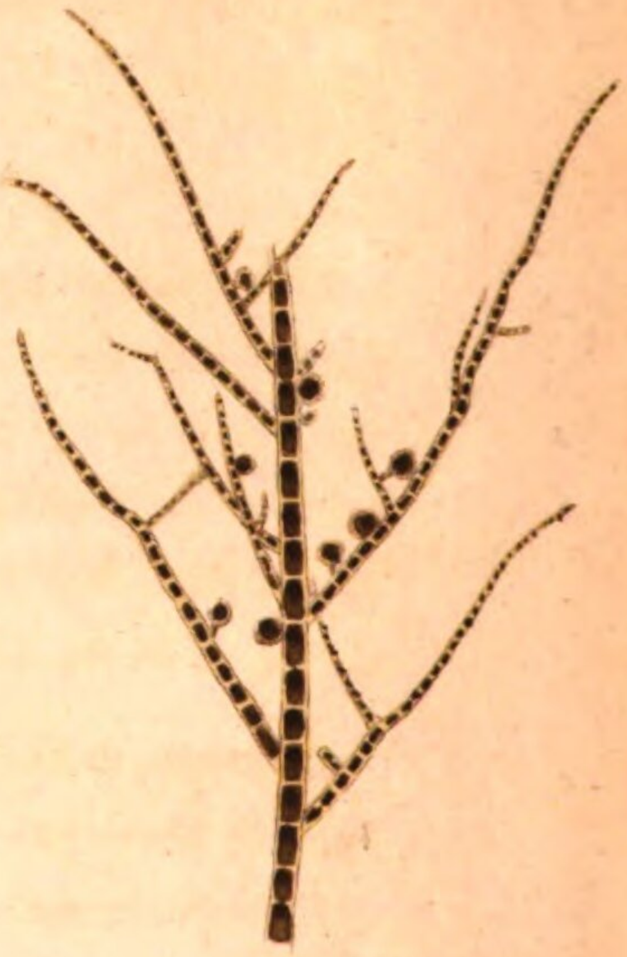
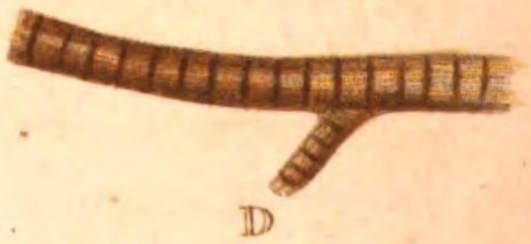


F



D

Conferva pennata.

W. W. Young del.t

J. Simpkins sculp.t

Published by I. W. Dillwyn March 1.st 1807.

CONFERVA PENNATA.

C. filamentis ramosis; ramis pinnatis; pinnulis sub-oppositis sub-horizontalibus, approximatis, strictis, dissepimentis obscuris, articulis brevibus, tuberculis sessilibus sphæricis.

C. pennata. Fl. Ang. p. 604. With. IV. p. 142.

C. marina pennata. Ray, Syn. p. 59.

In the Sea, on Rocks, Fuci and Corallines. Common in Ireland, *Dr. Scott.* At Brighton, *Mr. Borrer.* Isle of Wight, and Devonshire and Cornish Coast, not unfrequent, *D. Turner.* In Anglesea, *Rev. Hugh Davies.* About Scarbro'. *Travis.* Near Forres in Elginshire, *I. Brodie, Esq.* On the Mumble Rocks near Swansea.

THE present species, though far from uncommon, appears to have been remarkably ill understood in general, and confounded by most Botanists with small varieties or broken pieces of Conferva scoparia. Dr. Roth in the second Fasciculus of the Catalecta Botanica has referred it to his Ceranium pennatum, but in the third Fasciculus he corrects this error, and carries it properly to his C. cirrosa, with the description of which it does not however altogether accord.

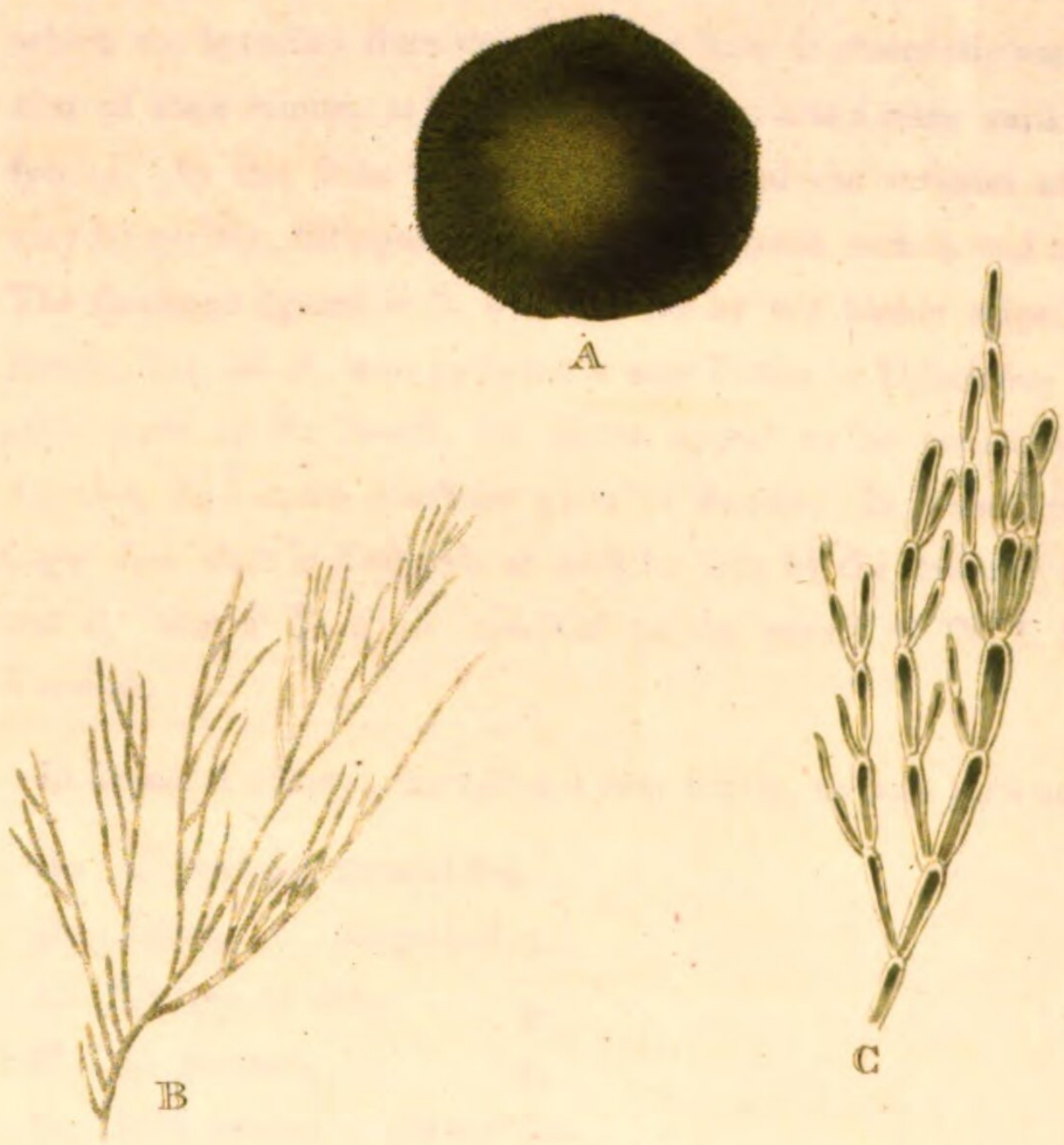
C. pennata sometimes grows on rocks, but most frequently on fuci or corallines, in bushy tufts varying from half an inch to two inches in length; the color is olivaceous, becoming brown with age; the stems are twice or thrice branched, but excepting the ultimate series the branches can hardly be called pinnate; the pinnæ, which are long and somewhat thorn-like, issue almost at right angles from the branches; their most natural disposition appears to be opposite, and in some plants two of them regularly issue from each alternate joint, but in this respect they are liable to great variation; the dissepiments are

of a dark color, and divide the filaments into joints, whoſe length does not exceed their thickneſs. The fructification which is drawn at F. from a dried ſpecimen in the Herbarium of my friend D. Turner, conſiſts of globular ſeſſile capſules on the branches.

For ſome time I had conſidered the plant figured at C. as a diſtinct ſpecies, and have diſtributed a few ſpecimens of it under the name of C. halecina. In this opinion I was joined by my much lamented friend the late Col. Velley, who had gathered it near Weymouth, but I have ſince ſeen ſome ſpecimens in which the branches from the ſame root have ſo materially varied in the diſpoſition of their ramuli, as to convince me that it is a mere variety of the preſent ſpecies. In this ſtate it approaches ſome of the varieties of C. littoralis, but may be readily diſtinguiſhed by its divaricated ramuli and more rigid nature. The ſpecimen figured at B. was ſent me by my highly reſpected friend James Brodie, Eſq. M.P. who gathered it near Forres in Elginſhire; where as alſo in other parts of the North, the pinnæ appear to be generally more regularly diſpoſed, than in the Southern parts of Britain. In Ireland the plant attains a larger ſize than in England, as may be ſeen by the drawing at E. for which, and for that at F. I am indebted to the pencil of W. I. Hooker, Eſq. of Norwich.

In drying it adheres, though not very firmly, to both glaſs and paper.

A. C. pennata, natural ſize.
B. Ditto, magnified 3.
C. Variety of ditto 3.
D. C. pennata, 1.
E. Iriſh ſpecimen, natural ſize.
F. Specimen in fruit, magnified 2.



Conferva aegagropila.

W. J. H. del.t

J. Sowerby sculp.t

Published by L. W. Dillwyn March 1st 1807.

CONFERVA ÆGAGROPILA.

C. filamentis ramoſiſſimis, e centro progredientibus, globum conſtituentibus; ramis ramuliſque ſubſecundis ſtrictis, obtuſis; articulis longis, cylindraceis.

Linn. Sp. Pl. p. 1637. Fl. Suec. p. 436. Fl. Ang. p. 604. With. IV. p. 142. E. Bot. XX. p. 1377. Roth, Cat. Bot. I. p. 181. II. p. 212. III. p. 244. Roth, Fl. Germ. III. p. 517. Weber et Mohr Iter Suec. p. 71. t. 1. f. 7. *a. b.*

In Alpine lakes in North Wales, *Rev. H. Davies.* North of Scotland, *Mr. Brodie.* Preſtwick Car, Northumberland, *Mr. Winch.* Culmere Pool, and Whitemere, Shropſhire, *Rev. Mr. Williams.*

THE preſent ſpecies, and Conferva Arbuſcula, I ſaw ſo little probability of being able to procure in a freſh ſtate, that I have ventured, with reſpect to them, to deviate from my original intention, by giving repreſentations of ſpecimens that had previouſly been dried; for which I truſt I ſhall not be blamed, as the Britiſh Catalogue can ſcarcely boaſt two more intereſting individuals, or two without which a work on the Genus would be leſs complete.

Conferva Ægagropila is a native of mountainous lakes in different parts of Europe, having been found in Sweden, Norway, and both the North and South of Germany. Dr. Roth has enumerated three varieties, of which I am not aware that more than one has hitherto been met with in England. Its ſize is uncertain, varying from that of a pea to a large walnut. The filaments always originate from a center, and extend with repeated ramifications to the extremities, preſerving an equal height, ſo that the form of the whole plant is conſtantly globular, in which, as far as my knowledge extends, no other ſpecies

of Conferva refembles it. No root, however, has yet been detected, nor any folid body within the mafs, to which the filaments might originally have been attached. The mode of ramification feems fomewhat uncertain, but the branches and ramuli are principally difpofed on one fide; they are always ftraight, and their apices are regularly obtufe. The length of the joints is about equal to three times their diameter; in a recent ftate they are perfectly cylindrical; but, when dried, the green matter collapfes as in moft others of this tribe, and never afterwards recovers itfelf by immerfion. The colour of this plant is a dark, but pleafant, green, deftitute of glofs. In drying it does not in the leaft adhere to either glafs or paper. It is fufficiently known that it derives its fpecific name from its refemblance to the hairy balls found in the ftomachs of goats. For the fpecimen here figured I am indebted to my excellent friend, Mr. Brodie.

Many Botanifts have been led into error refpecting C. Ægagropila, from the circumftance of fragments of C. capillaris being occafionally found rolled up by the tide fo as greatly to refemble that fpecies at firft fight, though it can fcarcely be neceffary to fay that the difference may immediately be detected on looking more clofely at them. Of thefe I have feen vaft numbers at different times on the fhores of the river at Yarmouth, but they are by no means of frequent occurrence. Is it poffible that C. Ægagropila itfelf fhould derive its globular form from a fimilar circumftance? *T.*

A. C. ægagropila, natural fize.
B. A branch, magnified 4.
C. A portion of ditto 2.

JUNE 1, 1807.

FASCICULUS 13,

Price 5 s.

OF A

SYNOPSIS

OF THE

BRITISH CONFERVÆ,

CONTAINING

SIX HIGHLY MAGNIFIED DRAWINGS,

COLOURED FROM NATURE;

WITH DESCRIPTIONS.

By LEWIS WESTON DILLWYN, F.R.S. & F.L.S.

LONDON:

PRINTED AND SOLD BY WILLIAM PHILLIPS,

GEORGE-YARD, LOMBARD-STREET.

1807.

A

B

Conferva phosphorea.

W. W. Young del.t

J. Singleton sculp.t

Published by L. W. Dillwyn, June 1st 1807.

CONFERVA PHOSPHOREA.

C. filamentis breviſſimis ramoſis, adſcendentibus, denſiſſimè in cruſtam uniformam implexis, violaceis; diſſepimentis obſoletis, articulis longiuſculis.

Byſſus phoſphorea. Sp. Pl. p. 1638. Fl. Ang. p. 605. Fl. Scot. p. 1000. With. IV. p. 143. Fl. Germ.. 564.

Auricularia phoſphorea. Sowerby's Engliſh Fungi. III. f. 350.

Byſſus lanuginoſa violacea lignis adneſcens. Ray. Syn. p. 56. Dill. Muſc. p. 54. t. 1. f. 6.

Byſſus purpurea delicatiſſima, arborum corticibus adnaſcens, breviſſimis & tenuiſſimis filamentis. Mich. Gen. p. 211. t. 90. f. 3.

Byſſus cœrulea cæſpitoſa criſpa. Hall. Hiſt. p. 2102.

Fungus violaceus herpatis modo lignis irrepens. Ray. Hiſt. III. p. 23.

On decaying wood.

THE Byſſi filamentoſæ, moſt of which I have had an opportunity of examining, ſo nearly reſemble each other in ſtructure and mode of growth, that the ſame reaſons for which aurea and purpurea were transferred to the Confervæ, will equally apply to them all, though probably to none leſs than to the preſent ſpecies, which it is not without conſiderable reluctance that I admit among the Confervæ, regarding it as a plant with the true hiſtory of which we are at preſent very little acquainted. Mr. Sowerby has claſſed it among the Auriculariæ, and obſerves that in its moſt perfect ſtate it ſeems to belong to that tribe, in which opinion he may poſſibly be correct, as I have myſelf ſeen ſpecimens of which the edges were of a pale ſtraw color like many of thoſe Fungi, and inclined to

curl off the wood they grow upon. At the ſame time as no author has noticed it in the ſtate in which it is here repreſented, I feel a pleaſure in probably contributing to throw ſome light upon it, and I leave it to future naturaliſts to determine its place in the ſyſtem.

I received the ſpecimen from which the preſent drawing was made from my friend T. W. Dyer, Eſq. who gathered it in Somerſetſhire. It grows on decaying wood, in patches of various ſizes, and of a beautiful and vivid violet color, which is permanent many years after it has been dried. The filaments are ſo extremely ſhort and much interwoven that the patches to the naked eye greatly reſemble the cruſt of a lichen, but their filamentous nature is in moſt ſpecimens* obſervable with the aſſiſtance of a common glaſs. The minuteneſs is ſuch that it is impoſſible to ſeparate them, ſo as to aſcertain the preciſe length or the frequency of their ramifications, but I apprehend the former rarely exceeds half a line, and that there are ſeldom more than one or two branches on each filament. The diſſepiments are by no means ſo eaſily diſcerned, or ſo regular as in C. purpurea, but are here and there obſervable, and divide the filaments into joints, of which the length exceeds the diameter. No fructification has been diſcovered.

A. C. phoſphorea, on decaying wood, natural ſize.
B. C. magnified 1.

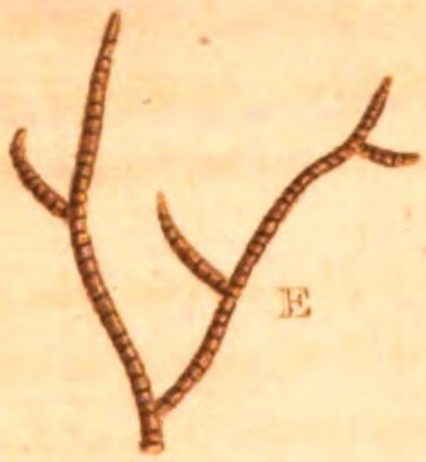
* I have examined ſome ſpecimens in which I could not detect them at all, and I therefore feel ſome doubt whether they may not be peculiar to a certain age or ſtate of the plant.

A

B

C

D



E

Conferva ortholrichi.

W. I. H. del.t

J. Sinclair sculp.t

Published by I. W. Dilleyn, June 1st 1807.

CONFERVA ORTHOTRICHI.

C. filamentis cœſpitoſis, pulvinatis, rigidiuſculis, fragilibus, ramoſis; ramis ſub-alternis, obtuſis; articulis brevibus, diametrum vix ſuperantibus.

C. muſcicola. E. B. XXIII. t. 1638.

On trees in the New Forest, Hampſhire, growing on *Orthotrichum ſtriatum*. *C. Lyell*, Eſq.

THE name of *C. muſcicola*, given to this ſpecies in Engliſh Botany, having been previouſly beſtowed upon a very different plant in Dr. Weber and Dr. Mohr's admirable Swediſh Tour,* and ſubſequently in Dr. Roth's Catalecta Botanica, I have been under the neceſſity of adopting a new one, and have with the concurrence of Dr. Smith, taken that of *C. Orthotrichi*, as the plant has at preſent been found upon no other tribe of moſſes. For the ſpecimen here figured I am indebted to Mr. Sowerby, to whom it was ſent by Mr. Lyell, the only perſon who appears to have yet found it in England, except indeed, as I ſuſpect, the curled appearance of *Orthotrichum ſtriatum*, mentioned in the Muſcologia Hibernica as the variety β, ſhould prove to be the beginning of it.

C. Orthotrichi grows in very thick entangled tufts on the upper branches of moſſes, having its roots in the leaves and ſtem, which it often ſo completely covers as to leave ſcarcely any part of them viſible. It is of a rich cheſnut color, dull and without gloſs when dry. The filaments are not above two or three lines high, erect, repeatedly branched; the branches generally diſpoſed at ſome

* *Reiſe durch Schweden*, p. 60. t. 1. f. 3 The Conferva here figured ſo nearly reſembles the *C. caſtanea* of this work, that I am apprehenſive they are not diſtinct, and I am ſorry I was unacquainted with Dr. Mohr's plant when I publiſhed my own Before, however, I conſider them as certainly the ſame, I ſhall hope for ſpecimens from that able botaniſt.

diſtance from each other, in an irregularly alternate manner, ſhort, blunt, ſimple, iſſuing from the ſtem at obtuſe angles, and pointing upwards. The joints throughout the whole plant are uniform, their length ſcarcely greater than their breadth, and with ſomewhat of a beaded appearance. Theſe circumſtances will be ſufficient always to diſtinguiſh it from *C. caſtanea*, t. 72, to which at firſt ſight it bears a ſtrong reſemblance. Great care is neceſſary not to confound either of theſe plants with the radicles, which ſhoot out of the ſtems of moſt ſpecies of moſſes that grow in moiſt places, and are particularly abundant on *Bartramia fontana* & *Bryum paluſtre*. *C. Orthotrichi* is alſo very nearly allied to *C. Acharii* & *C. rubicunda* of Roth, the latter of which may probably be the *C. ilicicola* of Engliſh Botany.

The texture of *C. Orthotrichi* is rigid and brittle; and in drying it adheres neither to glaſs nor paper. *T.*

A. A ſtem of *Orthotrichum ſtriatum* nearly covered with *C. Orthotrichi*, natural ſize.

B. Summit of ditto, magnified 6.

C. Leaf ditto 5.

D. Ditto ditto 4.

E. *C. Orthotrichi*, ſeparate 1.

Conferva pellucida.

W. I. H. del.t

J. Simpkins sculp.t

Published by I. W. Dillwyn, June 1st 1817.

CONFERVA PELLUCIDA.

C. filamentis erectis, ſtrictis, ramoſiſſimis; ramis plerumque ternis, obtuſis; articulis cylindraceis diametro quintuplo longioribus.

C. pellucida. Fl. Ang. p. 601. With. IV. p. 139. E. B. XXIV. f. 1716.

C. prolifera β. tenuior. Roth, Cat. Bot. III. p. 247.

On rocks, and ſtones in the ſea in Devonſhire, Cornwall, Suſſex, and Hampſhire. *Hudſon.* On the beach at Yarmouth.

THIS Conferva, though ſaid by Hudſon to be a native of ſo many counties, does not ſeem by any means a common ſpecies, and is certainly one of thoſe which are leaſt underſtood by modern botaniſts. How far Dr. Roth is right in referring it as a variety to his *Conferva prolifera* is a point I can by no means attempt to decide, as that plant is not a native of the Britiſh ſhores, and every perſon acquainted with this tribe muſt be aware how impoſſible it is to ſpeak with confidence from dried ſpecimens. I rather incline, however, from their different habits to think he is miſtaken.

The root of *C. pellucida* is a ſmall diſk, from which the filaments riſe in general ſingle; ſimple and naked at their baſe, but ſoon becoming branched, and afterwards ſo repeatedly divided, that the appearance of the plant towards the apices is remarkably buſhy. Their length is ſix or eight inches; their texture ſtiff, wiry, and elaſtic when freſh, but ſoon turning flaccid; their color a remarkably pleaſing, pale, ſubdiaphanous green, which is permanent even after drying. The branches are chiefly ternate, though ſometimes oppoſite, or even alternate; very ſtraight; between erect and patent; the apices bluntiſh. The length of the joints is about five or ſix times greater than their breadth; they are either quite

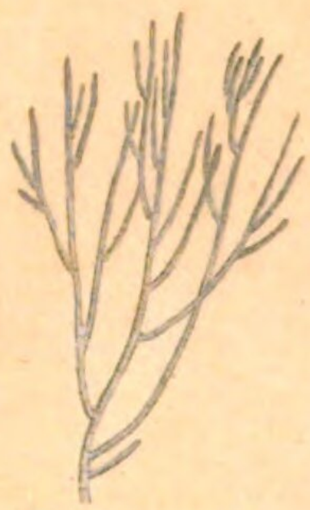
cylindrical, or very ſlightly incraſſated upwards: the diſſepiments are dark and narrow in a recent ſtate, but, as the plant decays, grow pellucid, from the collapſing of the juices.

For the drawing of this plant, as well as of the following, *C. Orthotrichi*, I am indebted to my friend, W. J. Hooker, Eſq.

In drying it does not adhere at all to glaſs, and very ſlightly to paper. *T.*

A. Conferva pellucida, natural ſize.
B. A ſmall branch, magnified 5.
C. A part of ditto 3.

A



B

C

Conferva chalybea.

W. W. Young del.t

J. Simpkins sculp.t

Published by I. W. Dilleyn, June 1st 1807.

CONFERVA CHALYBEA.

C. filamentis pulvinatis, ramosis, tenuissimis, strictis, erectis, fastigiatis; ramis sub-alternatim secundis, adscentibus, obtusis; articulis cylindraceis, longis.

C. chalybea. Roth. Cat. Bot. III. p. 286. Tab. 8. f. 2.

On Flints in Winterbourne Stream at Lewes, Sussex. *Wm. Borrer, jun.* Esq.

PROFESSOR Mertens first discovered the present delicate species in the neighbourhood of Bremen, and communicated it to Dr. Roth, who has published it with a good figure in the third volume of his Catalecta Botanica.— Mr. Borrer has since added it to the British Flora, having found it in Winterbourne Stream at Lewes, Sussex, and to him and Mr. Turner I am indebted for the specimen here figured. It grows on *flint-stones* in little tufts about a quarter of an inch in length, and of a blackish-green color, glossy when dry. The filaments, which are repeatedly branched, are erect, straight, of equal height, and very flaccid and slender throughout. The branches are placed at uncertain, generally considerable, distances from each other; and issue from the stem so as to form an obtuse angle, but immediately curve inwards, and then rise in a more or less upright direction; their disposition is far from regular, but they are frequently disposed on opposite sides in alternate parcels of two or three. The ramuli are always placed nearer to each other than the main branches, and I have frequently observed more than one proceeding from the top of the same joint; they are blunt at their apices; the dissepiments are readily observable with a microscope, and divide the filaments into perfectly cylindrical joints, of which the length is generally from four to six times greater than the diameter.

C. chalybea is most nearly allied to C. vivipara, but the description and figure here given will sufficiently prove it distinct.

In drying it adheres to both glaſs and paper, and more readily revives when immerſed in water than moſt other ſpecies.

A. C. chalybea, growing on a flint, natural ſize.
B. ditto magnified 3.
C. ditto ditto 1.

A

B

Conferva fusco purpurea.

W. W. Young del.t

J. Stephens sculp.t

Published by I. W. Dillwyn, June 1st 1807.

CONFERVA FUSCO-PURPUREA.

C. filamentis ſimplicibus, tenuiſſimis, rectis, ſub-faſciculatis, ætate inæqualiter toroſis; articulis brevibus utrinque ſub-pellucidis, demum ſerie globulorum cinctis.

On lime-ſtone rocks in the ſea about high water mark in the neighbourhood of Dunraven Caſtle. *W. W. Young.*

FOR the diſcovery of this Conferva I am indebted to my friend, W. W. Young, who found it growing with C. Rothii and another ſpecies not yet deſcribed, on the lime-ſtone rocks, a little below high water mark, in the neighbourhood of Dunraven. It may be worth remarking that theſe rocks which produce ſeveral Confervæ, that we have not been able to find on the Mumbles or other lime-ſtone in the weſtern parts of the County, are of a different ſort of lime-ſtone, and of that kind which I am informed is uſually called *lias ſtone*, and are ſimilar in quality to thoſe of which large quantities are exported from Aberthoir, and uſed for the ſame purpoſes as Dutch terrace. This and many other obſervations which I have made ſtrongly tend to confirm the opinion of my friend Dawſon Turner,* that the roots of the marine Algæ are not merely intended by nature to fix them to their places of growth, but that they are alſo uſeful as organs of nutrition, although the hardneſs of the ſubſtances on which many of theſe plants grow has led many botanists to ſuppoſe the contrary.

Mr. Young informs me that C. fuſco-purpurea frequently grows in very large patches, ſo as to cover the rocks for two or three ſquare feet, and gives them a very ſhewy appearance with its gloſſy hue and purple-brown color. The filaments are quite ſimple, ſtraight, rather entangled in their growth, and in length

* Synopſis of Britiſh Fuci. Intr. p. 16. & 23.

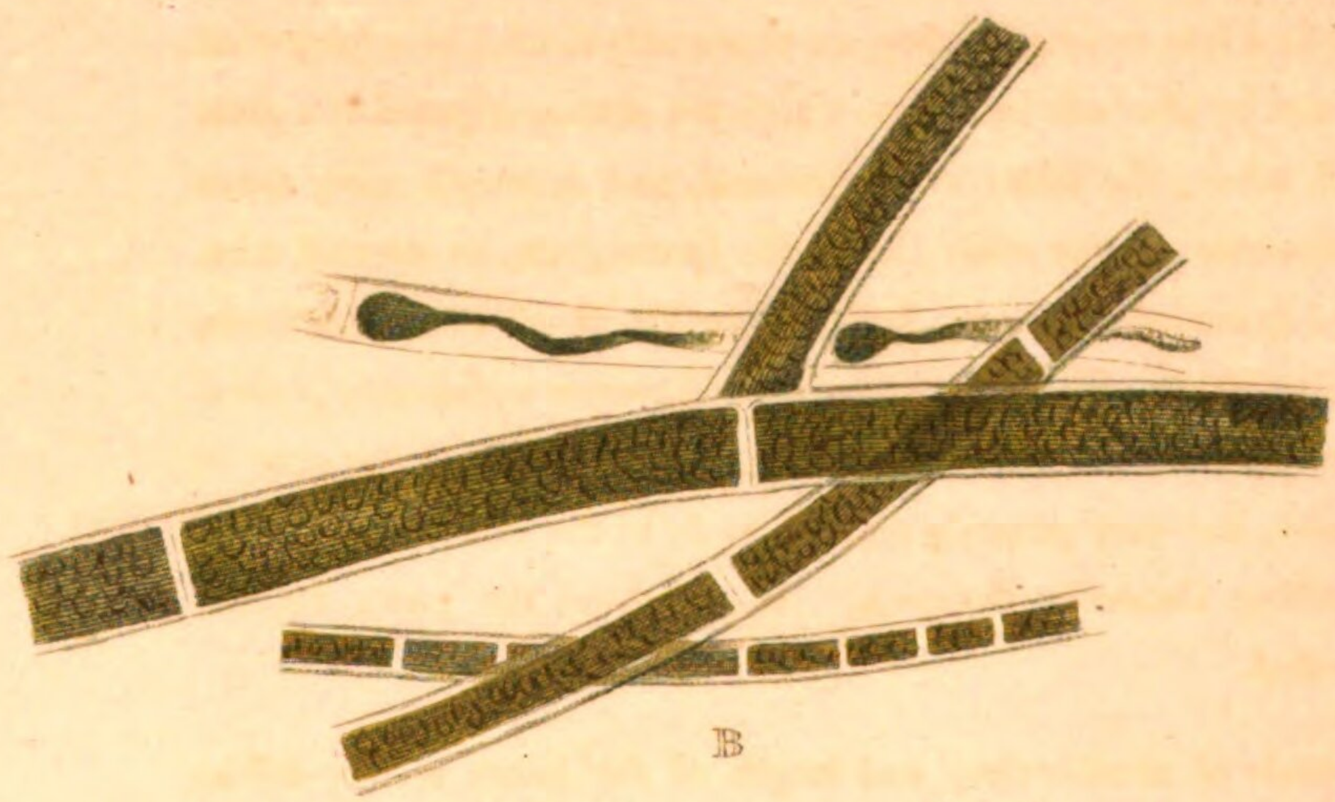
I believe ſeldom exceed an inch; when young their thickneſs is regular, but with age they ſwell ſo as in ſome places to be twice as thick as in others. The diſſepiments are ſo extremely ſlender that they can only be obſerved with the higher powers of the microſcope. The joints are in length but about half equal to their thickneſs; they are nearly pellucid on each ſide towards the diſſepiments, and when the plant is old the juices collapſe into globular granules, of which three are uſually diſpoſed tranſverſely in each joint, though ſometimes a ſingle one occupies the whole. C. fuſco-purpurea approaches in many reſpects to C. Curta and Roth's C. atro purpurea, but in the latter ſpecies the juices are ſaid to collapſe into a double row of granules, and the ſize as well as the place and mode of growth are very different, and from the former it is diſtinguiſhed by the color and texture of the filaments, and ſtill more effectually by the ſhortneſs of the joints.

In drying it adheres very firmly to both glaſs and paper.

A. C. fuſco-purpurea, natural ſize.

B. filaments of ditto, magnified 1.

A



B

Conferva crispata.

W. W. Ivory del.

J. Simpkins sculp.

Published by I. W. Dillwyn, June 1st 1807.

CONFERVA CRISPATA.

C. filamentis ramosis densissimè implicatis, crispatis; ramis alternis remotissimis; articulis cylindraceis longitudine diametrum multoties superantibus, siccitate alternatim compressis.

C. crispata. Roth. Cat. Bot. I. p. 178. III. p. 275. Flora Germanica. III. pars. 1. p. 508.

In ditches and pools, about Newton Nottage, Glamorganshire. *W. W. Young.* Also about London and Yarmouth.

I HAVE gathered C. crispata in the neighbourhood of London and Yarmouth, and Mr. Young has brought it from the vicinity of Newton Nottage, but I do not think that it is of such frequent occurrence as most of the other species. It generally grows in stagnant water, and floats in large entangled masses on the surface. The filaments are of a dark green, wholly destitute of gloss, and from six or eight inches to a foot in length; they are repeatedly divided in a somewhat dichotomous manner by alternate branches, which are always disposed at a great distance from each other; the joints are cylindrical, and in length many times greater than the diameter. In the older plants, the sporangium, or internal tube, which contains the granular substance, supposed by Dr. Roth to be the seeds, frequently contracts spirally. This appearance is not however sufficiently general to authorize its introduction into the specific character, as Dr. Roth has done in the first and second, but very properly omitted to do in the third fasciculus of his highly interesting Catalecta Botanica. When dried the joints become alternately compressed.

The dissimilar mode of ramification, and length of the joints readily distinguish this species from C. fracta; and from C. amphibia β, to which it bears most resemblance, it may be at once known by its far different joints.

In drying it adheres, though not firmly, to either glass or paper.

A. C. crispata, natural size.

B. ditto magnified 1.

JUNE 1, 1808.

FASCICULUS 14,

Price 5 s.

OF A

SYNOPSIS

OF THE

BRITISH CONFERVÆ,

CONTAINING

SIX HIGHLY MAGNIFIED DRAWINGS,

COLOURED FROM NATURE;

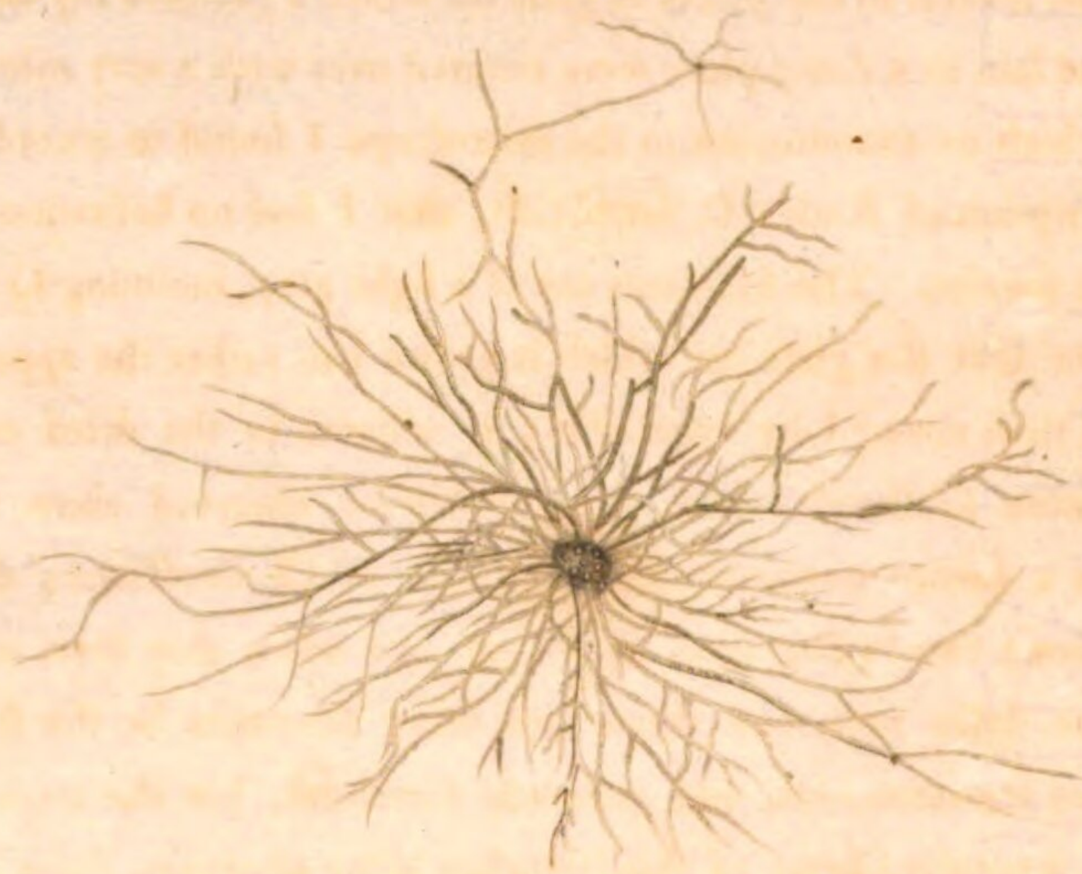
WITH DESCRIPTIONS.

By LEWIS WESTON DILLWYN, F.R.S. & F.L.S.

LONDON:

PRINTED AND SOLD BY WILLIAM PHILLIPS,
GEORGE-YARD, LOMBARD-STREET.

1808.



Conferva fenestralis.

W. W. Young del.t

J. Stephens sc.

Published by L. W. Dillwyn, July 1st 1808.

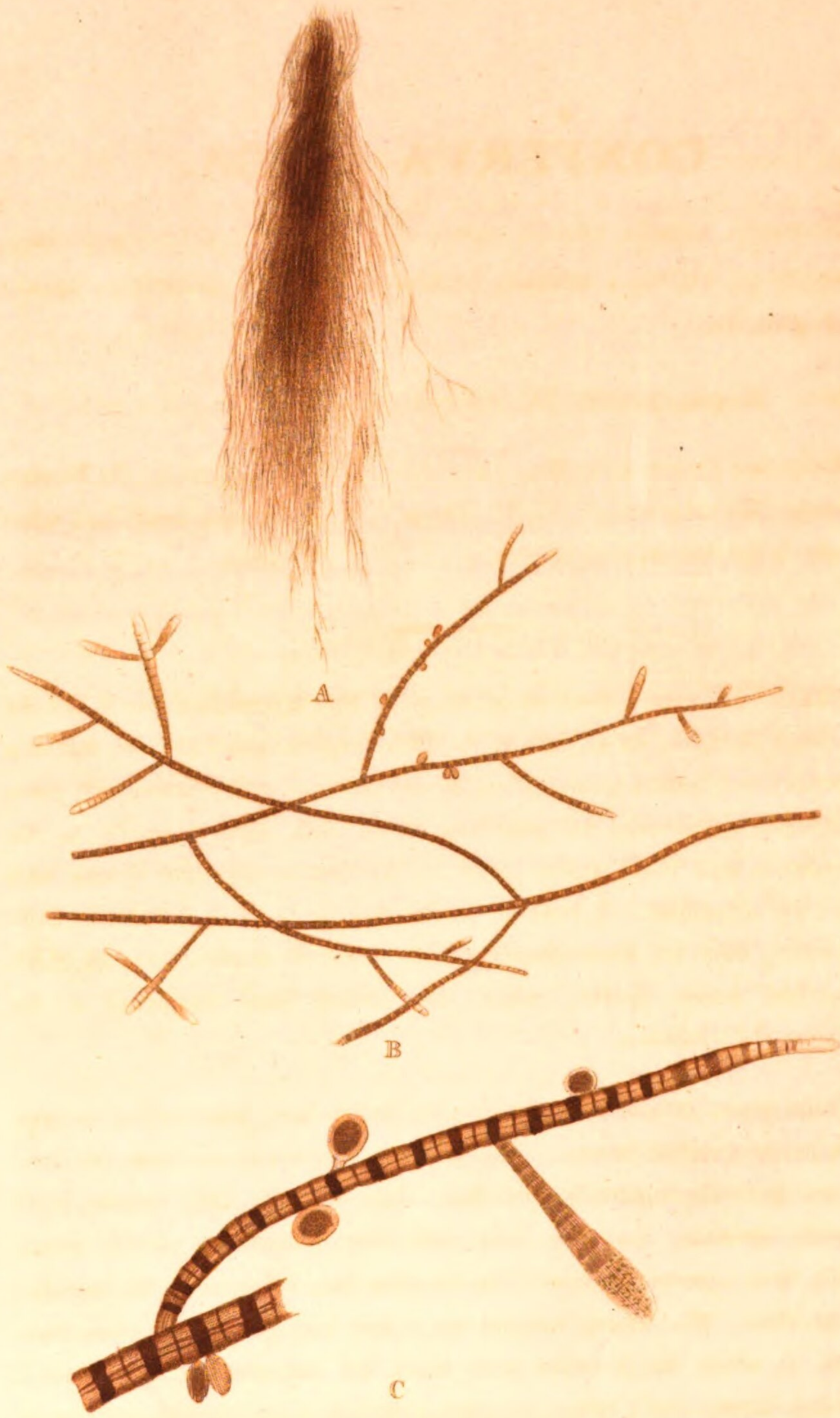
CONFERVA FENESTRALIS.

C. filamentis repentibus minutiſſimis, tenuiſſimis, ramoſis, centrifugis: ramis plerumque divaricatis.

C. feneſtralis, Roth, Fl. Germ. III. pars I. Cat. Bot. II. p. 161. III. p. 180.

On Glaſs.

I OBSERVED that ſeveral of the pieces of glaſs on which I preſerve my Confervæ, and which had lain in a damp place were covered over with a very minute mucor-like down, which on examination in the microſcope I found to accord ſo nearly with the deſcription of Roth's C. feneſtralis, that I feel no heſitation in publiſhing it as that ſpecies. The filaments are of a light grey, inclining to aſh color, and ſo minute that the glaſs on which it grows has rather the appearance of being ſoiled than covered by vegetation; it adheres to the dried confervæ, or ſome minute ſubſtance which may moſtly be obſerved about the roots; from this as a centre numerous filaments iſſue in all directions; they are uſually from about two to four lines in length, and when they meet with any proper ſubſtance ſtrike root, and throw out other filaments in the ſame way. The branches are numerous, and generally divaricate, but the mode of ramification is very irregular, ſome of the branches being alternate, ſome oppoſite, and three or four are not unfrequently diſpoſed without interruption on the ſame ſide. Diſſepiments may be occaſionally diſtinguiſhed, dividing the filaments into joints, of which the length is generally about thrice greater than the diameter. The fructification is unknown, but may probably conſiſt in ſome granules, which are often obſervable on the branches. In drying C. feneſtralis undergoes no change. The drawing was made with the higheſt power of a compound microſcope; the extremely ſmall ſize of the filaments rendering the plant almoſt inviſible to the naked eye, and conſequently precluding the poſſibility of figuring it in its natural ſtate.



Conferva fusca

W. W. Fowye del.t

J. Sing[illegible]

Published by L. W. Dillwyn. July 1st. 1808.

CONFERVA FUSCA.

C. filamentis ramosis venosis, ramis distantibus sub-alternis; ramulis patentibus clavatis; articulis breviusculis, medio fasciatis; capsulis sub-globosis.

C. fusca. Fl. Ang. p. 602. With. IV. p. 141.

On Rocks and Stones in the Sea. Anglesea. *Rev. Hugh Davies.* At Newton Nottage, Glamorganshire. *W. W. Young.* At the Worms Head, and other places in the extremity of Gower.

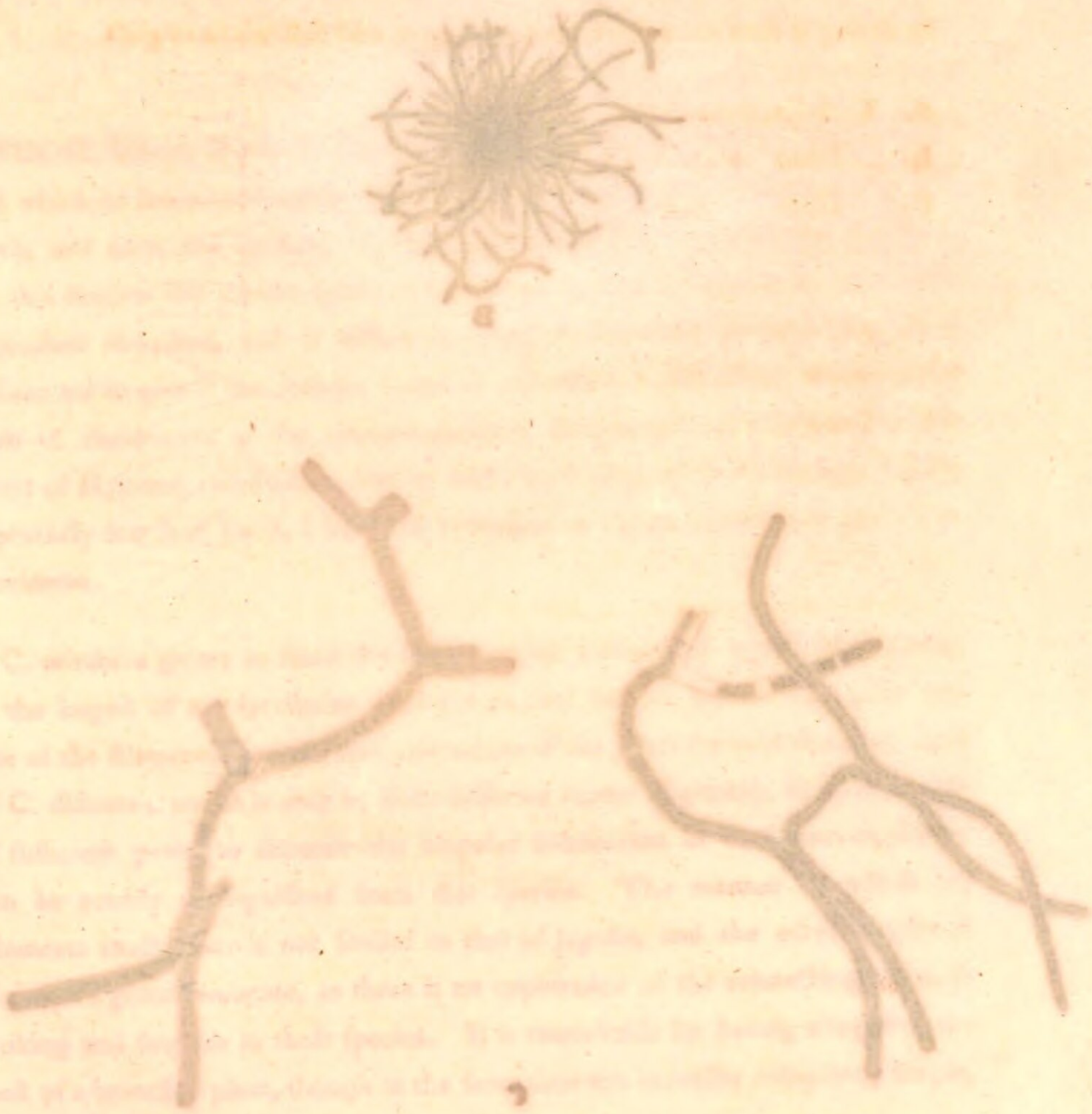
I RECEIVED a small specimen of the plant here figured from my friend the Rev. Hugh Davies as the *C. fusca* of the Flora Anglica, and I conceive that this gentleman's well known accuracy, and former intimacy with Hudson, will prove my sufficient justification for publishing it as such, more especially as the description in that Work applies better to this than to any other species with which I am acquainted. I however confess that in so doing I feel some hesitation arising from the uncertainty that must attend the elucidation of Hudson's dark-colored marine species, which has already been mentioned in the description of C. fucoides.

C. fusca grows in tufts from three to five inches long, and varying in color from a dull to a reddish brown. The filaments are numerous from the same root, and generally repeatedly branched. The branches long, remote, most commonly alternate, and often beset with short club-shaped ramuli, which generally form a greater angle with the branches than is formed by the branches with the stem. Mr. Young brought me a few half grown specimens from Newton, in which the branches were much less numerous than in those I gathered in Gower, and I believe the plant is subject to considerable variation in

this reſpect. The length of the joints but little exceeds their diameter; under the microſcope they appear of a light brown with a tranſverſe band in the middle, which nearly diſappears when the juices have collapſed by drying. The capſules are globoſe, rather ſmall for the ſize of the plant, and are ſometimes raiſed on ſhort fruit ſtalks.

In drying it does not adhere firmly to paper, and ſtill leſs ſo to glaſs.

A. C. fuſca, natural ſize.
B. Ditto magnified 3.
C. Ditto ditto 1.



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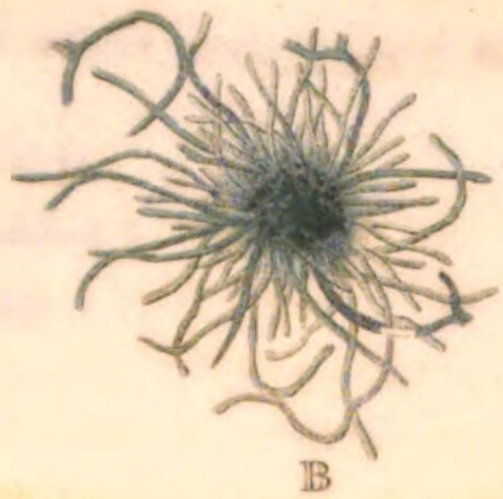
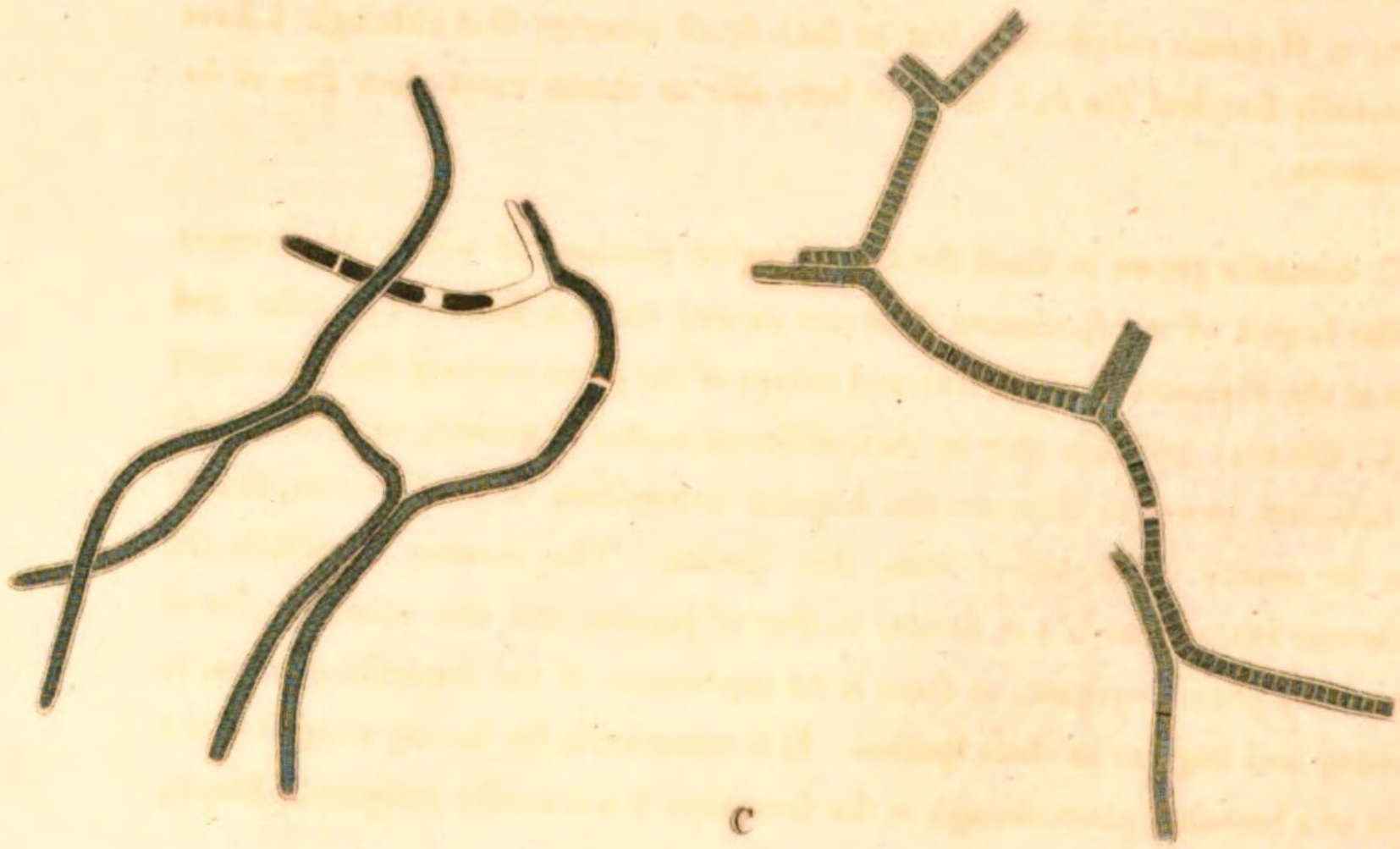


B



C

Conferva mirabilis.

W. W. Young del.t

Published by I. W. Dillwyn, July 2.nd 1808.

CONFERVA MIRABILIS.

C. filamentis ſpurie-ramoſis, cylindricis, cœruleo-vireſcentibus; ramis e coadunitis genuflexuris filamentorum; articulis breviſſimis.

On Stones, and the Stems of Hypnum ruſcifolium in the Stream which runs through the Wood at Penllergare, near Swanſea.

THOSE Species to which Vaucher has given the generic name of Oſcillatoria, and which he has placed among the Tremellæ, are arranged as Confervæ by Dr. Roth, and form the diviſion 'ſporangium annulis' in the Catalecta Botanica. To this diviſion the preſent plant belongs, but it does not appear to have been heretofore deſcribed, and it differs ſo ſingularly from all its congeners as to induce me to give it the ſpecific name of *mirabilis*. I diſcovered it intermixed with C. decorticans in the above-mentioned ſtream, and alſo attached to the ſtems of Hypnum ruſcifolium, but in ſuch ſmall quantity that although I have repeatedly ſearched for it, I have not been able to obtain more than five or ſix ſpecimens.

C. mirabilis grows in ſmall thickly entangled patches, of which the diameter in the largeſt of my ſpecimens does not exceed half an inch. The color and ſize of the filaments, and the ſize and nature of the joints entirely resemble thoſe of C. diſtorta; and it is only by their different modes of growth, or with a glaſs of ſufficient power to diſcover the ſingular connection of its filaments, that it can be readily diſtinguiſhed from this ſpecies. The manner in which the filaments anaſtomoze is not ſimilar to that of jugalis, and the other ſpecies of Vaucher's genus *conjugata*, as there is no appearance of the connecting tubes, ſo ſtriking and ſingular in thoſe ſpecies. It is remarkable for having altogether the look of a branched plant, though at the ſame time it is in reality completely ſimple,

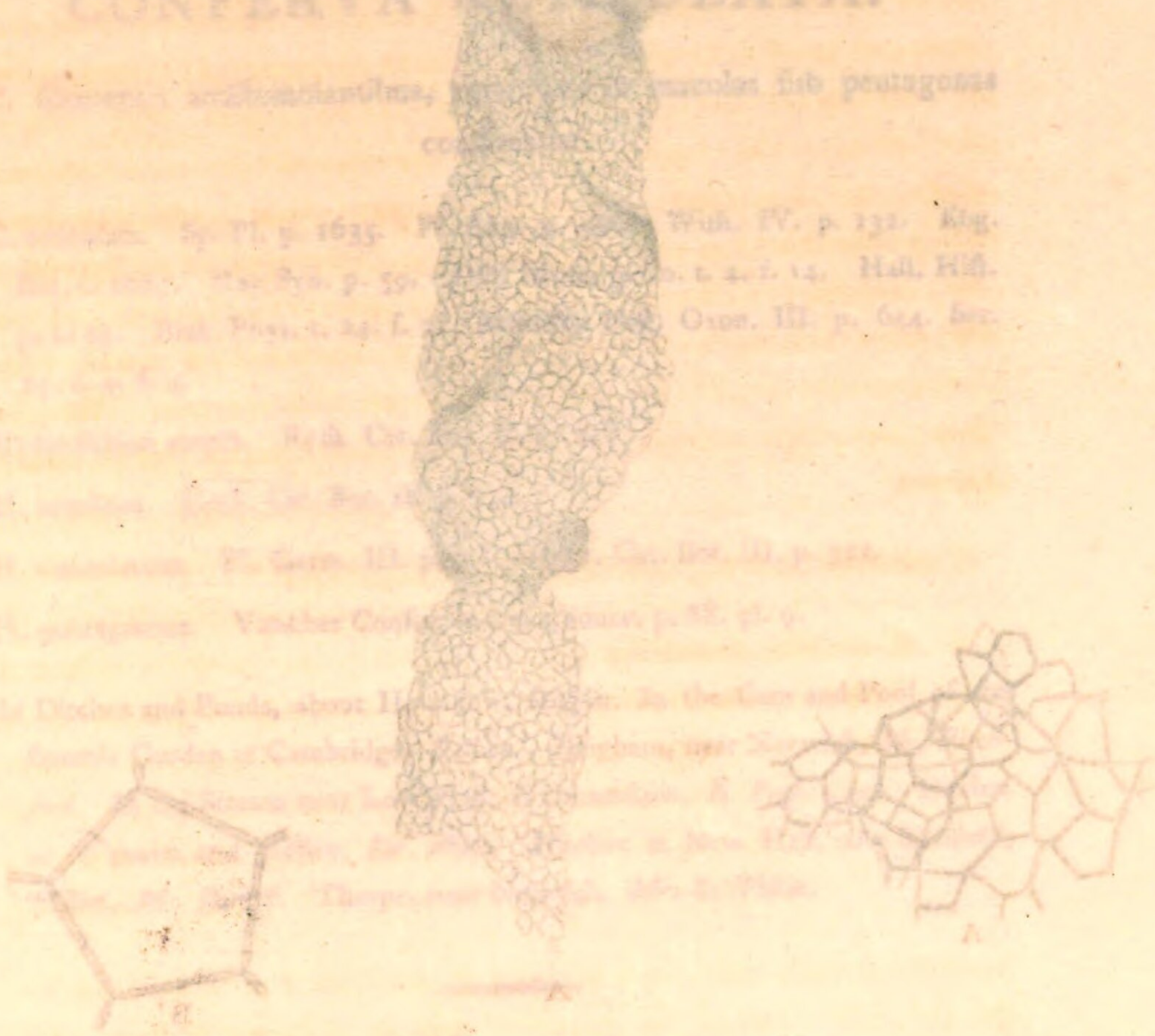
ſuch an appearance originating from the union of the ends of two of the filaments, each of which becomes geniculate at the beginning of the connection, and theſe ends are moſt commonly nearly of the ſame length. Other parts of the filaments are alſo frequently and ſometimes repeatedly connected with each other, in the ſame manner, and I have ſeen ſome which at firſt ſight bore a ſtriking reſemblance to a meſh of C. reticulata. I feel myſelf at a loſs even to offer a conjecture on the nature of this ſingular union of the filaments, and can only remark that they do not appear to effect any alteration in the interior of the joints, as is the caſe with C. jugalis, bipunctata and their congeners. When the juices have a little collapſed by drying, the tubular ſtructure may be readily obſerved.

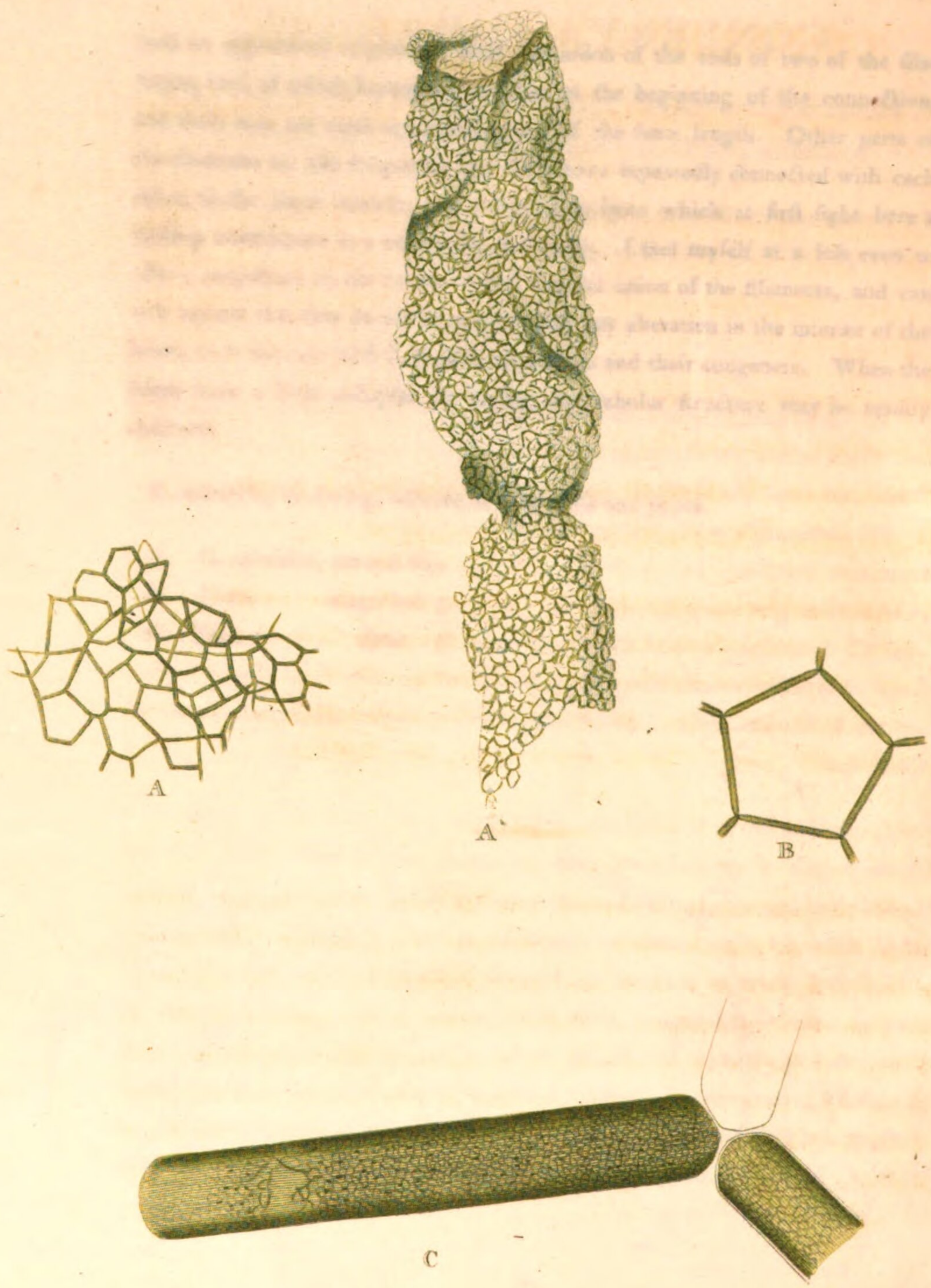
C. mirabilis, in drying, adheres to both glaſs and paper.

A. C. mirabilis, natural ſize.

B. Ditto magnified 3.

C. Ditto ditto 1.





Conferva reticulata.

W. W. Young del.t

J. Simpkins sc.

Published by I. W. Dillwyn, July 1st 1808.

CONFERVA RETICULATA.

C. filamentis anaſtomoſantibus, reticulatis in maculas ſub pentagonas coadunatis.

C. reticulata. Sp. Pl. p. 1635. Fl. Ang. p. 596. With. IV. p. 132. Eng. Bot. t. 1687. Ray Syn. p. 59. Dill. Muſc. p. 20. t. 4. f. 14. Hall. Hiſt. p. 2119. Pluk. Phyt. t. 24. f. 2. Morriſon Hiſt. Oxon. III. p. 644. Sec. 15. t. 4. f. 4.

Hydrodiction majus. Roth. Cat. Bot. II. p. 238.

H. tenellum. Roth. Cat. Bot. II. p. 239.

H. utriculatum. Fl. Germ. III. pars I. p. 531. Cat. Bot. III. p. 322.

H. pentagonum. Vaucher Conferves d'eau douce. p. 88. pl. 9.

In Ditches and Ponds, about Hounſlow, *Hudſon*. In the Cam and Pool of the Botanic Garden at Cambridge. *Relhan*. Heigham, near Norwich, *Mr. Pitchford*. In the Stream near Low Hall, Walthamſtow. *E. Forſter, jun.* Ditches at Woburn and Apſley. *Dr. Abbot*. Ditches at New Hall, near Kenfield, Suſſex. *Mr. Borrer*. Thorpe, near Norwich. *Mr. S. Wilkin*.

ON the ſame morning I received freſh ſpecimens of the preſent ſingular ſpecies from my friends the Rev. J. Davies and W. J. Hooker. The former gathered it in the Pool of the Botanic Garden at Cambridge, and the latter ſent it me from the neighbourhood of Norwich, where it was gathered by Mr. S. Wilkin. It floats in irregular maſſes on the ſurface of Ponds and Ditches, and though it has been diſcovered here and there in different parts of this kingdom and of the Continent, yet its known *loci natales* are comparatively ſo few that it muſt be reckoned among the rareſt of the freſh water Confervæ, as the ſpecies

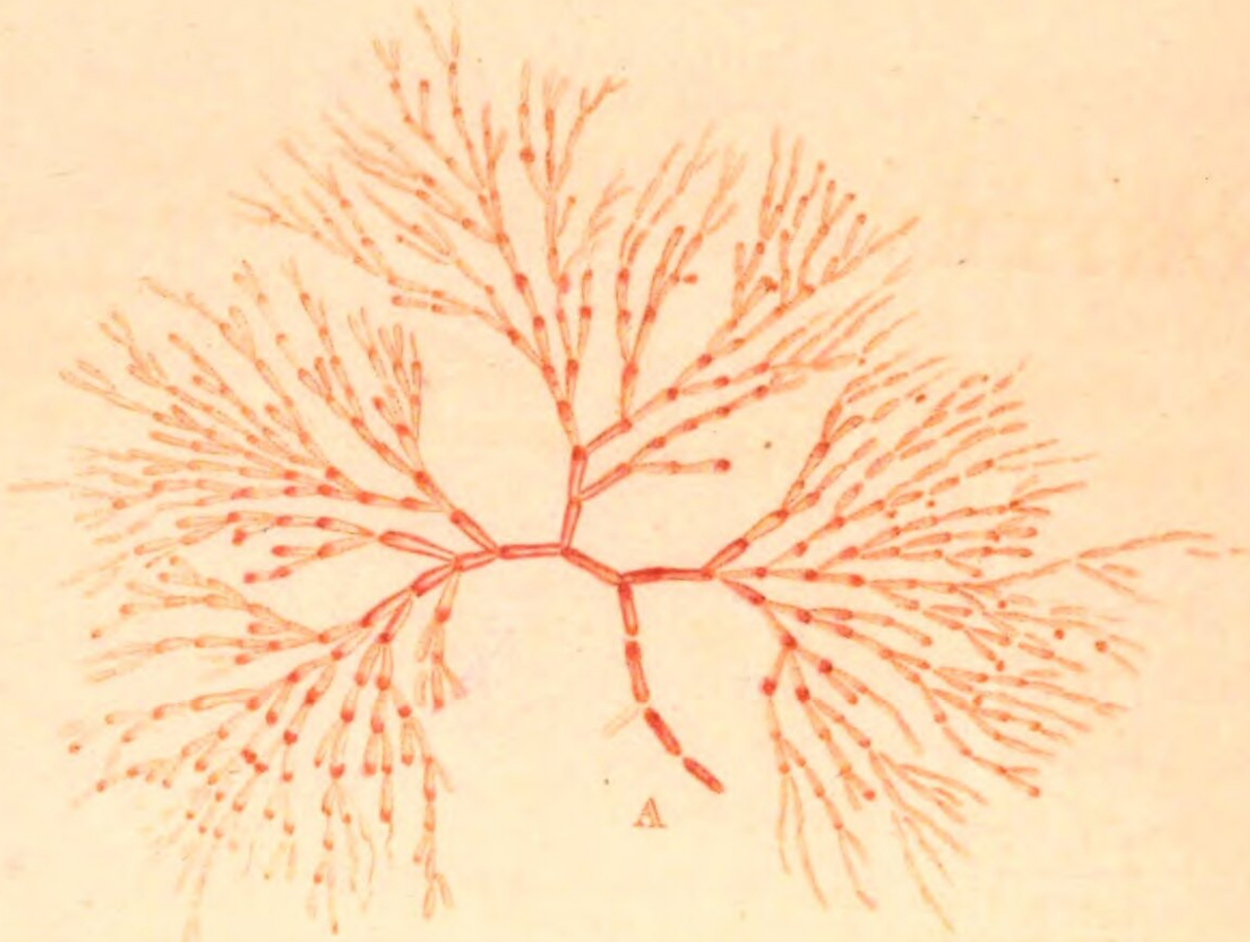
has been long well known to botaniſts, and the ſingularity of its ſtructure precludes the poſſibility of its ever having been confounded with any other. The whole plant forms an oblong net-like tube, varying from a few inches to a foot in length, and from half an inch to two inches in diameter; being all formed of meſhes which are moſt uſually pentagonal, but ſome are compoſed of four and ſome of ſix ſides. Each ſide is formed by a ſingle joint which branches in a dichotomous and almoſt divaricated manner at each end, ſo that theſe branches aſſiſt in forming other meſhes. The joints are cylindrical, and vary greatly in the ſame plant, ſome being twice as large as others, and the breadth varies proportionably from the ſize of human to that of the thickeſt horſe hair. Reſpecting the propagation of this ſpecies I cannot do better than copy the result of M. Vaucher's observations; they are ſo extremely curious and intereſting that I earneſtly recommend them to the notice of ſuch botaniſts as reſide in the neighourhood in which the plant grows, and ſhall only add that I long heſitated to give them credit, but confeſs that the few obſervations which my opportunities have allowed me to make tend ſtrongly to confirm them.

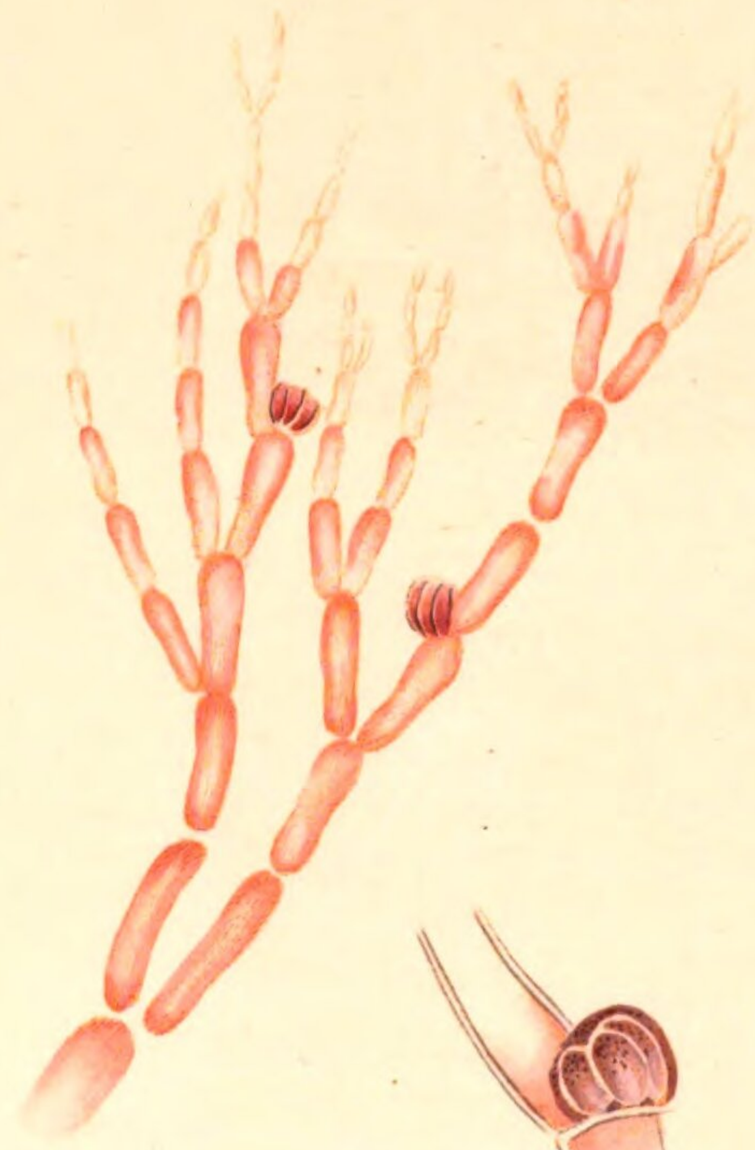
" Enfin, le 24 Germinal j'arrivai à ce but tant déſiré, et je vis d'un ſeul coup d'œil, toute la reproduction de l'hydrodictye. Chacun des cinq filets qui forment le pentagone commença à se renfler légérement, ſur tout à ſes extrémités. Enſuite il s'en ſépara, non pas par une rupture proprement dite, mais en ſortant de l'intérieur de la membrane dans laquelle il etait contenu, et qui ſans doute s'etait ouverte; et après cette ſéparation, il flotta dans l'eau ſous la forme d'un bâton cylindrique. Bientôt il s'aplatit, et éprouva un altération que je comparerai à celle qu'un commencement de fuſion produit ſur les métaux; ensuite il s'agrandit inſenſiblement dans tous les ſens, et les mailles dont la réunion le conſtituait s'etant écartées les unes des autres, il devint lui même un nouveau réſeau que l'on diſtinguait au microſcope. Bientôt ces mailles purent être obſervées à la vue ſimple, et enfin chaque bâton fut totalement changé en un réſeau entièrement ſemblable à celui dont il faiſait partie. Toutes ces tranſformations s'opérerent dans l'eſpace de quelques jours, et au bout de deux ou trois mois les jeunes réſeaux avaient acquis toutes les dimenſions dont ils

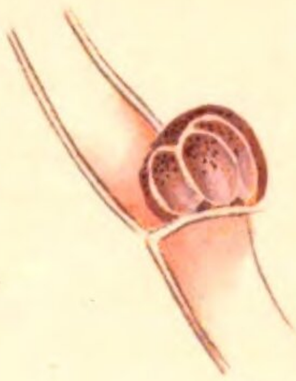
étaient ſuſceptibles. Quoique je n'éuſſe aucune doute ſur ce mode de reproduction, je n'ai pas laiſſé de le ſuivre pendant les deux années qui ſe ſont ecoulées depuis ma première obſervation. J'ai donc vu ces réſeaux qui étaient n'és dans l'an VIII. ſe conſerver pendant tout l'été ſans reproductions nouvelles et enſuite de développer au printemps de l'an IX, comme les autres s'étaient développés l'année précédente, et au moment où j'écris (1re Floréal, an X,) quoique le printemps ait été extraordinairement ſec, et que le foſſé où vit l'hydrodictye ſoit entirement privé d'eau les filets que j'y ai recueilles, et que j'ai rapportés chez moi ne ſont pas moins développés comme les autres années. Voilà donc une exemple d'emboîtement peut-être plus remarquable que tous ceux qui, juſqu'à préſent ont été obſervés. En effet il n'est guères permis de mettre en doute que ſi les côtés des mailles du réſeau de l'année précédente, étaient les réſeaux de cette année, les côtés des mailles des réſeaux actuels ſont auſſi les réſeaux de l'année prochaine, que chaque fibre de ces mailles est elle-même le réſeau qui ſe developpera dans deux ans, et que chaque fibrille de la fibre principale ſera le réſeau qui ſe développera dans trois ans, et ainſi de ſuite, juſqu'à ce qu'il plaiſe à l'auteur de la nature de mettre fin à ce développement en détruiſant l'eſpèce qui le préſente."

In drying, C. reticulata adheres, though not very firmly, to either glaſs or paper.

A. A. C. reticulata, natural ſize.
B. A meſh of ditto magnified 5.
C. A joint of ditto ditto 1.







Conferva corallina.

M. D. del.t

Published by I. W. Dillwyn, July 1st 1808.

J. Simpkins sculp.

CONFERVA CORALLINA.

C. filamentis, ramosis, dichotomis, lubricis; disseminentis contractis, articulis sursum incrassatis, longis, sub-pyriformis; fructu involucro polyphyllo subtenso.

C. corallina, Fl. Scot. p. 988. With. IV. p. 136. Roth. Cat. Bot. III. p. 225. Eng. Bot. t. 1815.

C. corallinoides, Sp. Pl. p. 1636. Fl. Ang. p. 598.

C. geniculata. Ellis in Phil. Transf. LVII. p. 425 t. 18. *f.* f. F.

C. marina gelatinosa, corallinæ instar geniculata crassior. Dill. Hist. Musc. p. 33. t. 6. f. 36.

Corallina confervoides gelatinosa alba, geniculis crassiusculis pellucidis. Dill. in Ray. Syn. p. 34.

On rocks and stones in the sea. At Cockbush, Sussex, and Ynys y Moch, near Bangor, *Dillenius*. Brighton, *Ellis*. Anglesea, *Rev. H. Davis*. Weymouth, *Mr. Stackhouse*. Hartley, Northumberland, *Mr. Winch*. Cowes in the Isle of Wight.

THIS beautiful species may be found on several parts of our coasts during the summer months, but is by no means of general growth. When not expanded in water it forms a gelatinous slippery mass. The color when the plant is in perfection is a bright transparent pink, not unmixed with scarlet, but with age or exposure to the sun becomes lighter, and often tinged with green. The root is fibrous, and throws out many filaments, which are repeatedly divided with regular dichotomies, and vary in length from three to six inches. In proportion to the length the filaments are thicker than in any of its congeners with which I am acquainted, being about half a line in diameter. The joints,

as Dr. Smith obſerves, are nearly pear-ſhaped, being much ſwollen towards the apex, and about thrice as long as broad. Mr. Borrer, whoſe opinion in all matters relating to cryptogamous plants is entitled to great deference, informs me that the fructification "consists of a maſs of ſeeds not encloſed in any membranous capſule whatever, but immerſed in a jelly, ſometimes forming a whirl in the contractions of the filament, and ſometimes a lateral knob in the ſame ſituation."* The ſpecimens which I gathered at Cowes produced an abundance of both whirled and lateral fruit, but the reſult of a long inveſtigation which I gave them, differed widely from the foregoing. The lateral knobs appeared to be perfect capſules, round all of which a tranſparent limbus was readily obſervable, and I ſaw ſeeds eſcape from the apex of one preciſely as in C. rubra, and the generality of the marine ſpecies. In ſome plants the capſules ſeemed to be compoſed of three or more cells, reſembling thoſe of Euphorbia, and I thought I obſerved ſome of the whirls to be formed by a number of ſimilar cells diſpoſed round the diſſepiments, and thus forming a kind of polylocular capſule. Though the ſhape and appearance of theſe whirls differed materially from each other, I never doubted that they were true capſules till I received Mr. Borrer's letter; and I am certain that a well defined pellucid limbus ſurrounded all that I examined, though frequently the ſeeds and mucus which had eſcaped ſo adhered to the outſide of the capſule as almoſt to cover it, and had I not been well acquainted with that gentleman's accuracy, I ſhould have imagined that this circumſtance had deceived and induced him to believe that no ſeed veſſel exiſted. The whirled and lateral fructification are ſometimes, though not generally found on the ſame plant, and both are always ſubtended by an involucrum of ſeveral obtuſe, jointleſs, incurved leaves. This production of different kinds of fruit is far from being confined to C. corallina. I am informed that three have been diſcovered on C. ſetucea, which is nearly allied to the preſent ſpecies, and Mr. Borrer remarks, "I ſhould not be ſurprized by any variety of fructification in the marine algæ, having myſelf found on Fucus pinaſtroides no leſs than four kinds." Reſpecting the red granules

* See Eng. Bot. t. 1815.

which I have above called ſeeds, he adds, " In ſome ſpecimens they were oval, and in appearance ſolid; in others globoſe, and ſeemingly divided into three, and unleſs I am very much miſtaken, each ſeed in either caſe had a pellucid limbus." Mr. Hooker, who examined ſome ſpecimens which were nearly freſh, could not diſcover any limbus, and he is of opinion that the ſeeds (commonly ſo called) of both fuci and confervæ, which have a limbus, are in fact capſules. I confeſs that the microſcope I uſed in the Iſle of Wight, was neither ſo good or convenient as that which I commonly uſe, and therefore I much more doubt my own correctneſs than Mr. Borrer's, more especially as he has had frequent and much better opportunities of ſtudying this ſpecies than myſelf. My obſervations as before related afforded me no room to doubt, that the nature of both the whirled and lateral fructification is ſimilar to that of Roth's Ceramia; but if Mr. Borrer's obſervations and Mr. Hooker's ideas are correct, the fructification conſiſts of minute capſules immerſed in a looſe tranſparent jelly, without any caſe or covering.

In drying C. corallina loſes much of its color, and adheres firmly to either glaſs and paper.

A. C. corallina, natural ſize.
B. D° with lateral fruit magnified 4.
C. D. D° d° 2.
E. whirled fruit d° 2.

N. B. C. D. and E. were completed from freſh ſpecimens in the Iſle of Wight.

A

B

D

C

Conferva vaginata.

W. W. Young del.t

J. Simpkins sculp.t

Published by I. W. Dillwyn, July 1st 1808.

CONFERVA VAGINATA.

C. filamentis ramosis cylindricis geniculatis cœruleo viridescentibus, ramis vaginato-fasciculatis, articulis brevissimis

Oscillatoria vaginata. Vaucher Histoire des Conferves d'eau douce. P. 200. tab. 15. f. 13.

C. velutina β. Roth. Cat. Bot. III. p. 200?

Frequent during the Winter months on damp soil, by the sides of paths, &c. about West Town, Sussex. *Mr. Borrer.* On Earth in the Flower-pots in a Green-house at Norwich. *Mr. Hooker.* On Rocks and Stones in the Stream which runs through the Wood at Penllergare, near Swansea.

I DISCOVERED this singular species, growing mixed with C. decorticans, on stones which are occasionally overflowed by the stream, and also entangled among the filaments of C. fluviatilis, and the leaves of fontinalis antipyratica, in the neighbourhood of Penllergare. My friends Mr. Hooker and Mr. Borrer inform me, they also have found it in their respective neighbourhoods, but in situations so dissimilar, that the plant seems to possess a perfect indifference with respect to the soil or place in which it grows.

Though Vaucher in the drawing of this plant has not availed himself of the higher powers of the microscope, his figure and description are too clear to admit any doubt of its being his Oscillatoria vaginata. It may be well to remark that this author has formed limosa, fontinalis, and their congeners with short annular joints into a separate genus, which he has placed among the Tremellæ, and given it the name of Oscillatoria, from a spontaneous motion that he supposes them to possess. Of the nature of this motion I have already hazarded an opinion in the description of C. limosa, and these plants, both in structure and

appearance, ſo entirely accord with the Conferva, that I confeſs myſelf ſurpriſed at their having been removed by that able author to the Tremellæ, to which they ſeem to bear a far leſs affinity. As Dr. Roth ſays he could not diſcover any ſheath in his variety of C. velutina, to which he refers Vaucher's C. vaginata, I have thought it right to quote it as a ſynonym with a mark of doubt.

C. vaginata grows in ſmall tufts, of which the diameter of the largeſt that I have gathered does not much exceed a quarter of an inch, and the greater part of them are in fragments of a ſtill ſmaller ſize. The filaments are cylindrical, and reſemble thoſe of C. limoſa, except that they are branched, and that they are encloſed in bundles within a membranous ſheath, which is ſo peculiar to this ſpecies that it is alone ſufficient to diſtinguiſh it from every other I am acquainted with: theſe ſheaths are themſelves branched or divided repeatedly into ſmaller ones, at irregular diſtances of various ſizes; they are narroweſt at their origin, and become ſwollen upwards, as the filaments increaſe by branching, ſo as ſometimes to reſemble a ſeries of Cornucopiæ. The ends of the filaments which are of various lengths project beyond the ultimate diviſion of the ſheath, and they are ſometimes curiouſly coiled round each other. It appears probable that this ſpecies is propagated by the ſeparation of the different diviſions of the ſheath, each of which may thus form a diſtinct and perfect plant, and Vaucher goes ſo far as to ſuppoſe that every individual filament at length becomes an envelope for other filaments which are generated within them.

In drying, C. vaginata adheres, though not firmly, to either glaſs or paper, and when dried, may be revived by immerſing it in water.

A. C. vaginata, natural ſize.

B. Ditto magnified 3.

C. Piece of ditto, magnified 1.

D. Ditto, larger than it appeared in the microſcope.

APRIL 1, 1809.

FASCICULUS 15,

Price 5s.

OF A

SYNOPSIS

OF THE

BRITISH CONFERVÆ,

CONTAINING

SIX HIGHLY MAGNIFIED DRAWINGS,

COLOURED FROM NATURE;

WITH DESCRIPTIONS.

By LEWIS WESTON DILLWYN, F.R.S. & F.L.S.

LONDON:

PRINTED AND SOLD BY WILLIAM PHILLIPS,
GEORGE-YARD, LOMBARD-STREET.

1809.

CONFERVA TURNERI.

C. filamentis primum fasciculatis; primis apicibus subconglobatis; articulis longis diffepimentis pellucidis; capitulis in planis infra medium secundis, pedunculatis, globosis.

Ceramium Turneri. Roth. Cat. Bot. 2. p. 21. Tab. 5.

On Peat and Coralline on the coast of Sussex. Mr. Turner.

A

THE present species was first observed some years ago by my friend Mr. Turner, and was communicated by him to Dr. Roth, who named it in honour of its discoverer, and published a description of it in the third part of his Catalecta Botanica, p. 21. Specimens of it were also sent to me by Mr. Turner, and I have since found it on the coast of Sussex myself.

Caespites from one to two inches in length, and as thick as a bristle, of a dark purple colour, and very tough. The Filaments are nearly as in the Ceramium Rubrum, but the branches are more numerous, and the ultimate ones are very short, and more or less crowded together, so as to form a kind of fasciculus. The branches are also more or less contracted at the joints, and are very long between the joints, which are very transparent, and have a very conspicuous diffepiment. The tubes are very minute, and are filled with a dark purple colour, which is very conspicuous in the joints, but not in the long transparent internodes. The tubes are also very numerous, and they are perfectly colourless at their diffepiments. The capitula are numerous, globose, usually twisted on their footstalks, and arranged together on the upper side of the lower primary, though in general infinitely, a considerable space from one another on the final peduncle.

Conferva Turneri.

W. J. Hooker Regt del.t

J. Singleton sculp.t

Published by L. W. Dillwyn

CONFERVA TURNERI.

C. filamentis pinnatis fasciculatis; primis oppositis sub-simplicibus; articulis longis dissepimentis pellucidis; capsulis in pinnis infra medium secundis, pedunculatis, globosis.

Ceramium Turneri. Roth. Cat. Bot. III. p. 128. Tab. 5.

On Fuci and Corallines in the Sea at Cromer. *D. Turner, Esq.*

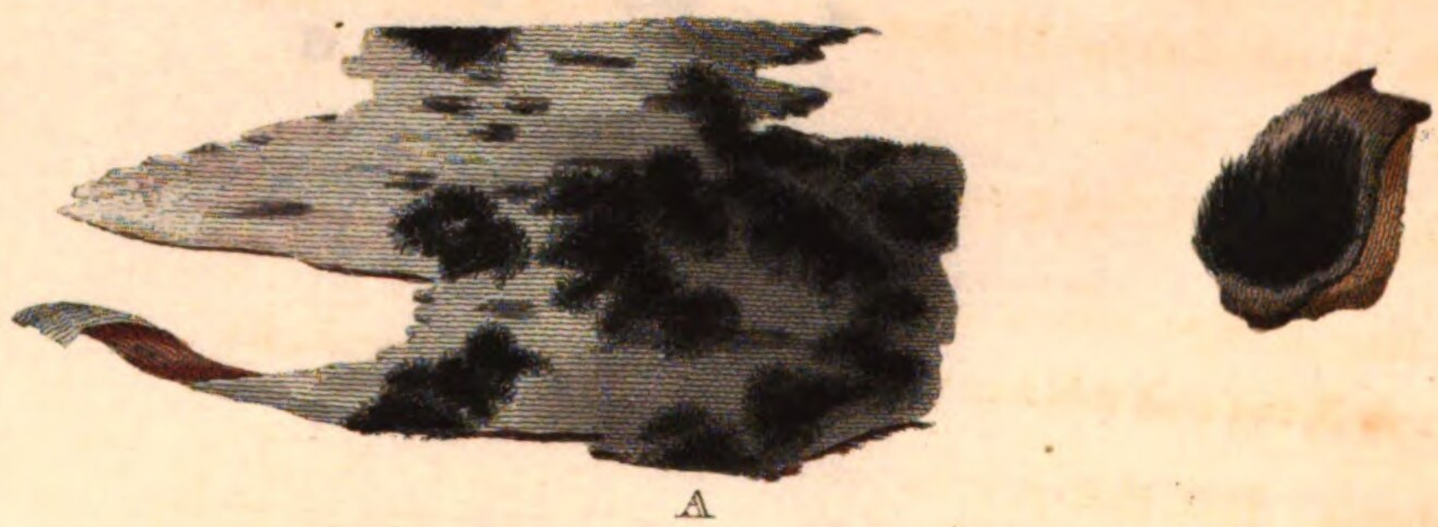
THE present species was first discovered some years ago by my friend Mr. Turner, and was communicated by him to Dr. Roth, who named it in honor of its discoverer, and published a description in the third Fasciculus of his Catalecta Botanica, with a good drawing from the accurate pencil of Professor Mertens. The species which has subsequently been figured in English Botany under the same name, is the C. plumula of Ellis and of this work.

C. turneri is found in great abundance on fuci and corallines in the sea at Cromer, during the summer months, and from its elegant growth and delicate rose color, may be considered one of the most beautiful of the Confervæ. Its habit is bushy, forming thick tufts. The filaments rarely exceed an inch in length, and are undivided, but beset with opposite and mostly simple pinnæ, from four to six lines long, between patent and horizontal, which are sufficient readily to distinguish this species from C. rosea, to which in appearance it is most allied. The length of the joints is about thrice greater than their diameter, and they are perfectly colorless at their dissepiments. The capsules are numerous, globose, mostly raised on short footstalks, and arranged together on the upper side of the lower pinnæ: though in general solitary, it occasionally happens that two are supported on the same peduncle.

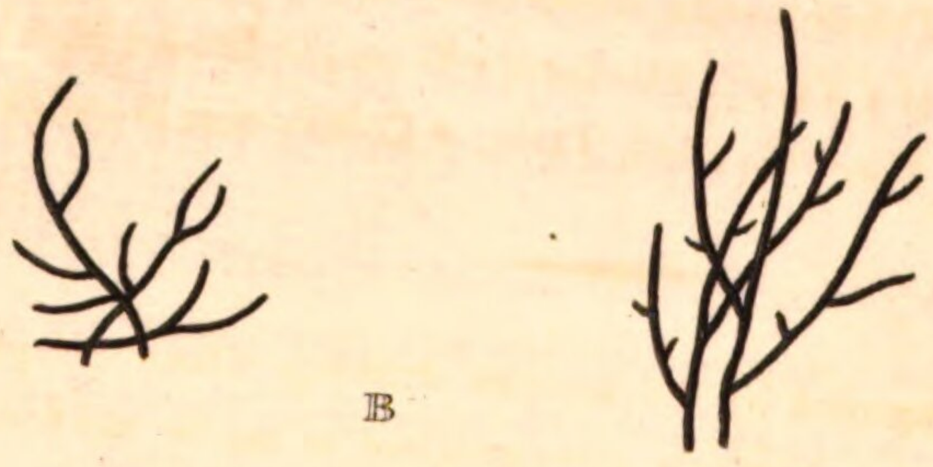
For the drawing I am obliged to my friend William Jackſon Hooker, Eſq. to whom for many other valuable communications this work is alſo greatly indebted.

In drying it adheres to both Glaſs and Paper.

A. C. turneri, natural ſize.
B. Ditto, magnified 4.
C. Ditto, ditto 3.
D. Ditto, ditto 1.



A



B

C

Conferva ebenea.

W. J. Hooker Esq.r del.t

J. Simpkins sculp.t

Published by L. W. Dillwyn

CONFERVA EBENEA.

C. filamentis ramosis, erectis, cæspitosis, brevibus, rigidis, sub-cartilageneis; ramis ramulisque obtusis; articulis diametrum longitudine æquantibus; dissepimentis contractis.

Conferva nigra. Roth, Cat. Bot. III. p. 299.

Byssus nigra. Fl. Ang. p. 606. Fl. Scot. p. 1003. With. IV. p. 144. Fl. Germ. III. pars 1. p. 567.

Byssus petrea nigerrima fibrosa. Dill. Hist. Musc. p. 9. t. 1. f. 18.

Byssus minima saxatilis nigra ramosissima, &c. Micheli. Gen. Plant. p. 212. Tab. 90. f. 5. & Byssus cæspitosa nigra, &c. p. 211. Tab. 90. f. 7. ejusd. lib.

Byssus nigra velutina. Hall. Hist. p. 2104.

On Rocks and Trees. *Dillenius.*—On Rocks in the Highlands. *James Brodie, Esq.*—On the Stump of a Tree in Mackbeth's Wood, at Brodie, near Forres, N. B. *W. J. Hooker, Esq.*—On Birch Trees, at Costesy near Norwich. *Mr. S. Wilkins.*

C. EBENEA, accompanied by the accurate drawing, which is represented in the annexed plate, was obligingly communicated to me by my friend Mr. Hooker, who, in company with Mr. Turner, gathered it near Forres, in Scotland. Authentic specimens with which I have been favored by Sir Thomas Frankland and the Rev. Hugh Davies, prove that Hudson's *Conferva nigra*, respecting which I had previously been accustomed to yield to the generally received opinion of its being the same as *Fucus fruticulosus*, is in reality the *C. atro rubescens* of this work. In consequence of this it became necessary to change the name given to the species here figured by Dr. Roth, who in the third Fasciculus of his Catalecta Botanica has, with great propriety, removed the plant from the Byssi to the Confervæ, but has retained the specific name of

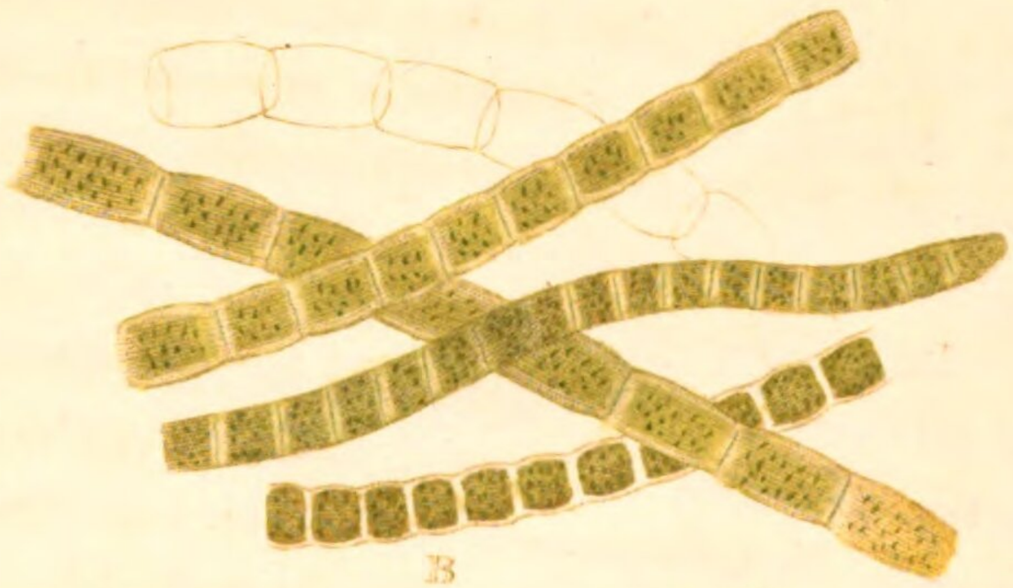
the Flora Anglica, in the place of which I have adopted a nearly ſimilar appellation, propoſed by my friend Sir Thomas Frankland.

C. ebenea grows on rocks and trees in thick black tufts, together forming patches of various ſizes, but it is not by any means a common ſpecies. Mr. Turner tells me that at a little diſtance the patches look like ſmall ſpots of ſoot. The filaments I believe never exceed three or four lines, and are moſt frequently conſiderably leſs than a line in length; their ſubſtance is ſtiff, ſomewhat horny, and their growth erect: they are about twice branched in a ſub-dichotomous manner, and the branches are irregularly beſet with ſimple patent ramuli with obtuſe apices. The diſſepiments are opake, more or leſs contracted, and divide the filaments into joints, of which the length about equals their thickneſs. No fructification has been diſcovered.

In drying it adheres but very ſlightly to either Glaſs or Paper.

A. C. ebenea, natural ſize.
B. Ditto, magnified 3.
C. Ditto, ditto 1.

A



B

Conferva Youngana.

W. W. Young del.

J. Simpkins sculp.

Published by L. W. Dillwyn

CONFERVA YOUNGANA.

C. filamentis cæſpitoſis, ſimplicibus, rigidiuſculis, apicibus obtuſis; diſſepimentis contractis; articulis breviuſculis, adultioribus ſubnodoſis; ſuccus in globulos ſolitarios demum congeſtus.

On the Lime-Stone Rocks near Dunraven Caſtle, Glamorganſhire. *W. W. Young*.—On the Piles of the Jetty at Great Yarmouth, and Cromer, Norfolk. *W. J. Hooker*, Eſq.

THE preſent ſpecies was firſt diſcovered by Mr. William Weſton Young, A.L.S. in honor of whom I have named it, as a token of my private friendſhip, and as a public acknowledgment of the aſſiſtance which this work has received from his accurate pencil.

C. youngana grows very plentifully on the limeſtone rocks about Dunraven, frequently in ſuch places as are never covered by the ſea, and only waſhed by the ſpray at high water; and Mr. Young tells me that it never grows much lower than high water mark, or where it is not left expoſed to the air during the greater part of the day. The ſituations in which Meſſrs. Turner and Hooker have found it at Yarmouth and Cromer are in this reſpect ſimilar. It forms elegant little tufts, uſually about a quarter of an inch in length, and of a dark green color. The filaments are ſimple, ſomewhat rigid, obtuſe at the apices, and when the plant is at maturity they become contracted at each diſſepiment. The length of the joint varies conſiderably in different filaments, being ſometimes only equal to and at others double the diameter. In the young plants theſe joints are nearly of the ſame color throughout, but with age they become more pellucid towards the diſſepiments, and at length the green matter collapſes into a globule which ſometimes diſappears, and leaves the filaments perfectly colorless.

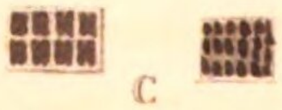
In drying C, youngana adheres to Paper, but not at all firmly to Glafs.

A. C. youngana, natural fize.

B. Ditto, magnified 1.

A

B



C

Conferva atro-purpurea?

J. Stephens sc.

Published by T. W. Dilwyn, Feb. 1st 1809, Swansea.

CONFERVA ATRO-PURPUREA.

C. filamentis ſimplicibus, ætate hic illic inæqualiter toroſis, atro-purpureis; articulis diametro dimidio brevioribus, ſingulis ſeriem dupliciem globulorum includentibus.

C. atro-purpurea. Roth, Cat. Bot. III. p. 208. t. 6.

Bantry Bay, Ireland. *Miſs Hutchins.*

C. atro-purpurea was firſt diſcovered growing upon mill-wheels, in the vicinity of Bremen, and communicated to Dr. Roth by Profeſſor Mertens. Miſs Hutchins has lately gathered it in Bantry Bay, and from her, through the medium of our mutual friend, Mr. Turner, I have received ſpecimens of this, as well as of ſeveral other ſpecies at preſent undeſcribed; an account of which I ſhould have been happy to publiſh, had they not ſuffered too much change in drying. The preſent is one of the few Confervæ that may be reſtored by immerſion in water, and I have therefore ventured to make the annexed drawing from a dried ſpecimen.

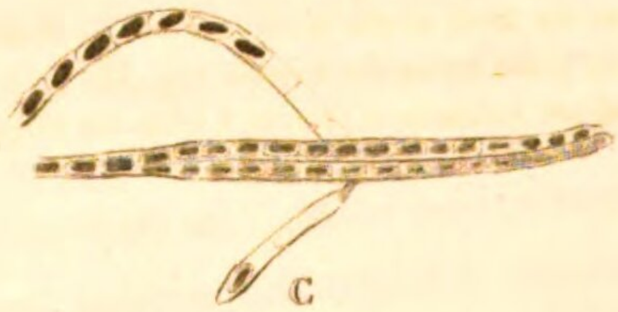
The root is fibrous; the filaments grow in ſmall tufts, they are about two or three inches in length, thinner than human hair, nearly ſtraight, of a gloſſy hue, and dark purple color. As in C. fuſco purpurea, when the plant is young the filaments are moſt probably of an uniform thickneſs, and they are ſo deſcribed by Dr. Roth, but thoſe now before me are in ſome parts ſwelled, and much thicker than in others; the diſſepiments are narrow and pellucid; the joints are in length but about half equal to their diameter, and each contains two rows of granules diſpoſed tranſverſely, which, like thoſe of C. bipunctata, occaſionally take a ſtellated appearance. A longitudinal pellucid line is obſervable

running through the middle of ſome filaments, and in others the bands of granules are divided in like manner into three or four ſeparate compartments.

C. atro-purpurea is very cloſely allied with C. fuſco-purpurea, but in that ſpecies there is only a ſingle band of granules in each joint.

In drying it adheres to both Glaſs and Paper.

A. C. atro-purpurea, natural ſize.
B. Ditto, magnified 2.
C. Ditto, ditto 1.



Conferva fœtida.

J. Simpkins sculp.

Published by L. W. Dillwyn, Feb.y 10th 1809.

CONFERVA FŒTIDA.

C. filamentis ramosis, flaccidis, virgatis, coadunatis, apicibus liberis; ramis confertis sub-dichotomis; dissepimentis obsoletis, articulis longiusculis granula elliptica solitaria includentibus.

Ulva fœtida, Vaucher. Histoire des Conferves d'eau douce. p. 244. t. 17. f. 3.

Stagnant Pools in the Salt Marshes at Cley, Norfolk; *Mr. Hooker*. Bantry Bay; *Miss Hutchins*. Among the Rocks near low water mark, under the Mumbles Light-House, Glamorganshire.

IN the early part of last June I discovered this curious production of nature, growing under the Mumbles Light-House, in a pool left by the tide, near low water mark, where, had not the tide receded unusually low, it would not have been exposed to view. This I at first supposed to be its natural situation, and the cause of its not having been previously discovered, but I have since learnt that Mr. Hooker had gathered it two months before, in the salt marshes above mentioned, and had ascertained it to be the plant described and figured by Vaucher. C. fœtida, therefore, seems to possess an unusual indifference with respect to its place of growth, for, he says, "Elle se rencontre dans touts les eaux fraiches et courantes des petits ruisseaux." I have not ventured on introducing it as a vegetable without considerable hesitation, on account of its strong peculiar oily * smell, resembling that of some of the zoophites, but the eye, even when assisted with the highest powers of a microscope, cannot discover any

* The remark made by Vaucher upon the smell of this plant, agrees almost exactly with what I had observed before I had any idea of my plant being the same as his. He says, "L'odeur qu'elle repand est très forte, et ressemble aux odeurs animales et surtout à celle des corps qui commencent à entrer en putréfaction."

appearance at all ſufficient to diſtinguiſh it from the tribe with which it is now arranged.

C. fœtida grows in thick buſhy tufts, near two inches in length and of a dull olive color. At firſt ſight it very much reſembles C. littoralis, but when examined under a glaſs it differs entirely from this and every other ſpecies with which I am acquainted. The root appears to be a very minute callus, from which numerous ſhort creepers are thrown out, but it is ſo ſmall as to be hardly obſervable. The filaments are very flaccid, and peculiarly ſlender in proportion to their length; they are twice or thrice branched in an irregularly dichotomous manner, and in their adheſion to each other reſemble thoſe of C. vaginata, but there is not any appearance of a ſheath. The branches at their baſe, and frequently through nearly their whole length are cloſely united to the ſtem, in the ſame manner as are the main filaments to each other, being ſeparated only at the extremities, which gave cauſe to Vaucher's making it a part of the ſpecific character, "extremitatibus multoties diviſis". The length of the joints is nearly double the diameter, each joint contains an egg-ſhaped maſs, reſembling thoſe of C. jugalis, which, from analogy, I ſuppoſe are formed by a collapſion of their juices, or internal granules, and are ſomehow connected with the fructification, as ſuppoſed by Vaucher, but like him I have had no opportunity of inveſtigating the matter.

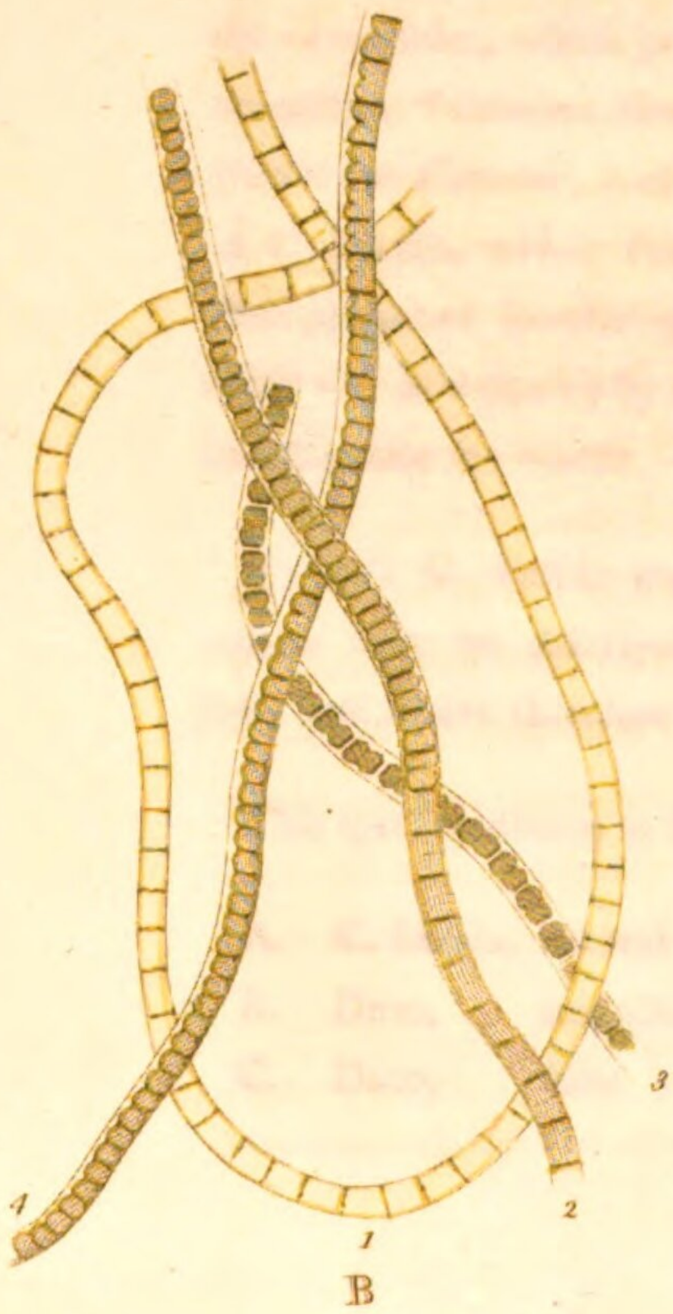
Villars's C. fœtida may poſſibly be the ſame plant as is here figured, but neither from his deſcription nor his figure is it poſſible to decide upon the ſubject, and I have therefore not quoted him.

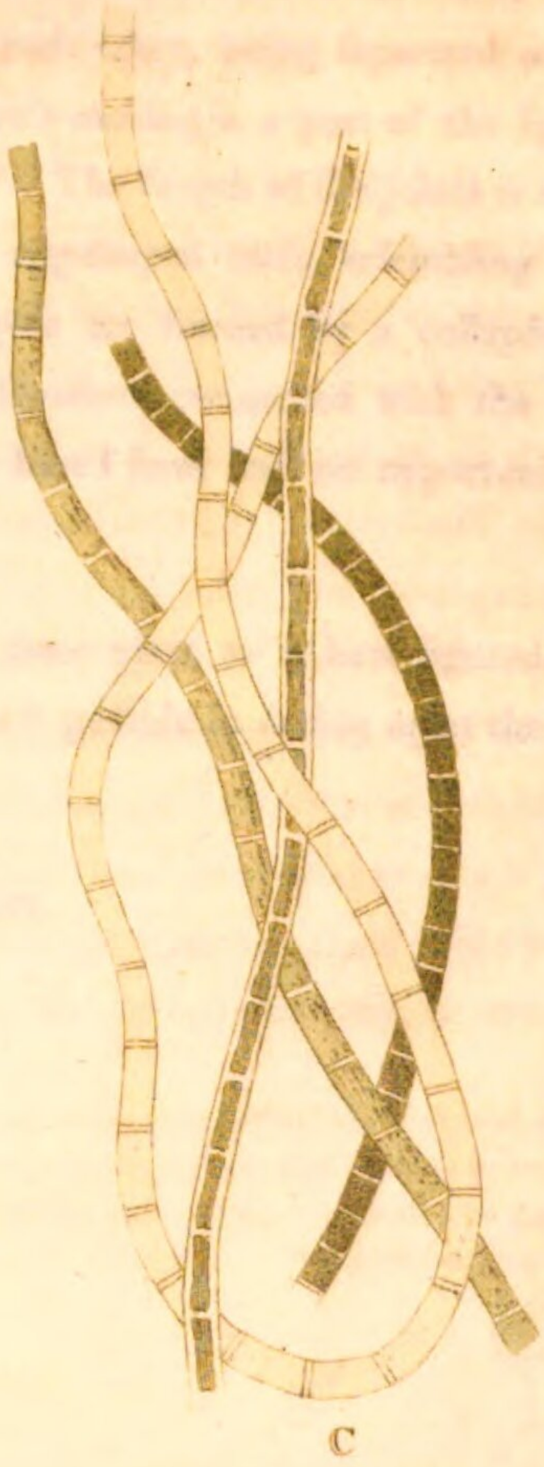
This ſpecies adheres to both Glaſs and Paper.

A. C. fœtida, natural ſize.

B. Ditto, magnified 2.

C. Ditto, ditto 1.





Conferva bipartita.

W. W. Dropp del.

J. Stephens sculp.

Published by I. W. Dillwyn.

CONFERVA BIPARTITA.

C. filamentis ſimplicibus, tenuibus, longiſſimis, denſiſſimè compactis, flavo virentibus; articulis diametro ſub triplo longioribus denium bipartitis.

In ſmall Pools on the Bogs on Town Hill Common, near Southampton. *Mr. Woods.*

In the Ditches between Pontardylais and the Sea, Carmarthenſhire.

THE preſent ſpecies almoſt fills the ditches in the marſhes between Pontardylais and the ſea, and I cannot find that it has been heretofore deſcribed. It floats on the ſurface of the water in large denſely matted maſſes, of a yellowiſh green color, and retains air bubbles in the ſame manner as thoſe ſpecies which were formerly confounded together under the name of C. bulloſa. The filaments are very long, unbranched, and in thickneſs rather exceed thoſe of C. rivularis. The length of the joints is uſually from three to four times their diameter. At a certain age the interior of each joint ſeparates by a tranſverſe diviſion in the middle, into two veſicles, which at length contract and become rounded at the corners. In figure B, the filament marked No. 1 is in its youngeſt ſtate: in the lower part of No. 2, the tranſverſe ſeparation of the joints has juſt commenced, and it is ſeen in the different ſtages of advancement towards the upper end of the ſame filament and in No. 3. Theſe internal veſicles when thus contracted are ſometimes diſpoſed, as is repreſented at No. 4, and it frequently happens that the division has commenced at one ſide of the filament and not on the other. The plant figured at C grew in the ſame place and manner with the foregoing, and could only be diſtinguiſhed by the microſcope. I found the filaments of both mixed with each other, and the joints of many were ſo intermediate as to prove that both belong to the ſame ſpecies.

C. bipartita may be diſtinguiſhed from C. ſordida by the ſmaller and remarkably pellucid filaments of the latter, as well as by their more ſimple internal ſtructure. From C. rivularis it may be known by its different color and mode of growth, and by its longer joints with two veſicles in each. Both theſe ſpecies however vary, and occaſionally approach each other in a ſurpriſing manner, and no other Confervæ have ever puzzled me ſo much. I have gathered C. rivularis, in ſome of the filaments of which there has been a pellucid line running longitudinally through them, as if they were about to ſeparate in that direction. It alſo frequently happens that the coloring matter in the joints of that ſpecies is collapſed alternately on both ſides of the filament, ſo as to preſent a curious zic-zac appearance, and I once ſaw the internal veſicles of C. bipartita arranged in the ſame manner.

In drying it adheres, though not ſo firmly as C. rivularis, to either Glaſs or Paper.

A. C. bipartita, natural ſize.
B. Ditto, magnified 1.

September 1, 1809.

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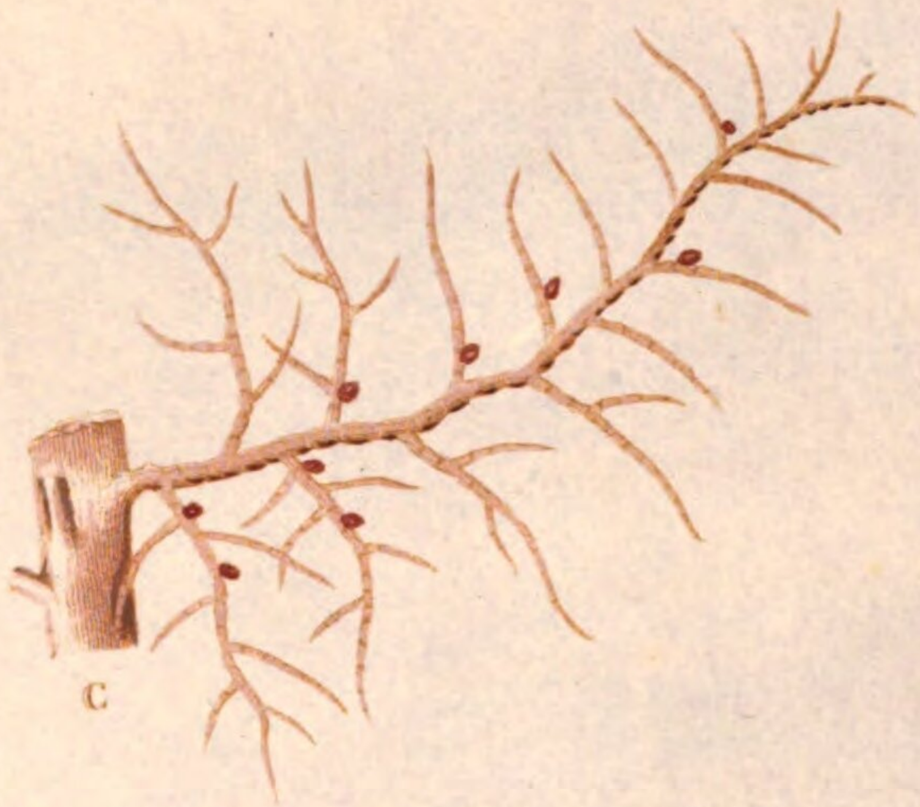


Conferva Hookeri.

W. J. Hooker Esq.r del.t

J. Simpkins sculp.t

Published by I. W. Dillwyn

CONFERVA HOOKERI.

C. filamentis primariis inarticulatis, ramulis pinnatis, tenuibus, flexuosis, undique sparsis, pallide rubro - fuscescentibus; pinnulis alternis articulatis; articulis diametro sesquilongioribus.

On Rocks in the Sea at Cawsie, Murrayshire; *Mr. Hooker* and *Mr. Borrer*. Holyhead; *Rev. Hugh Davies*. Bantry Bay; *Miss Hutchins*.

I HAVE been favored with a specimen of this plant gathered by the Rev. Hugh Davies, and which was marked by Hudson "*C. albida*." The specimen in the Dillenian Herbarium according with Hudson's reference is however very different, and agrees better with both the name and description of that species.

Mr. Hooker favored me with the present drawing from a specimen which he gathered during his late tour through Scotland, and I have a pleasure in embracing the opportunity it affords me of thus acknowledging the great assistance which I have received from him, by distinguishing it with his name.

C. Hookeri grows to the length of two or three inches, and whilst recent has a remarkably gelatinous appearance. The color is a pale reddish brown. The principal stems are entirely destitute of dissepiments, and are of an unequal thickness, so that if examined separately they might be mistaken for an Ulva: they are however beset with pinnated, flexuose, jointed ramuli, and which are remarkably slender in proportion to the thickness of the stem: the pinnulæ are alternate. The length of the joints is about half greater than the diameter. The capsules are nearly globular and of the same nature with those of *C. rosea*. It is in size and mode of growth nearly allied to *C. arbuscula*, but differs in its color, in being branched throughout its whole length, in having pinnated instead of multifid ramuli, and in the shape and disposition of its capsules.

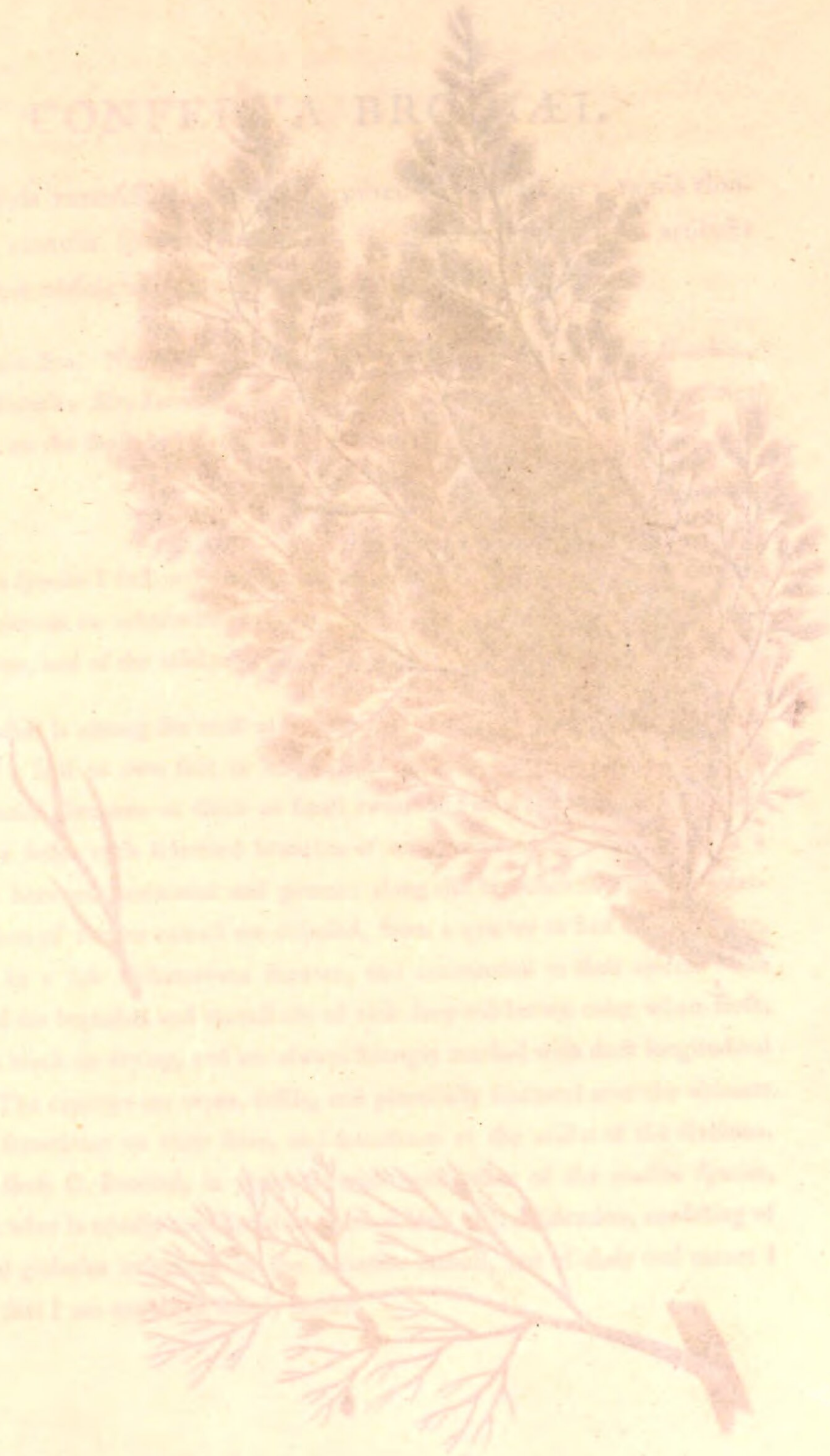
In drying it adheres firmly to both Glaſs and Paper.

A. C. Hookeri, natural ſize.

B. Ditto, magnified 3.

C. Ditto, ditto 2.

D. Ditto, ditto 1.



A

C

B

Conferva Brodiai.

Miss Hutchins del.

Published by L. W. Dillwyn

J. Simpkins sculp.

CONFERVA BRODIÆI.

C. filamentis ramosissimis venosis purpureo-nigrescentibus; ramis elongatis, ramulis sparsis, patentibus, fasciculatis, multifidis; articulis ramorum obsoletis, ramulorum diametro sub-longioribus.

Rocks in the Sea. Near Forres; *James Brodie, Esq.* Bantry Bay; *Miss Hutchins.* At Falmouth; *Mr. Turner.* At Seaton, Devon; *Mr. Griffiths.* Sometimes thrown on the shore at Dover.

OF this species I first received specimens from Mr. Brodie, and have named it after him as an acknowledgement of the kind attention with which he has honored me, and of the assistance which he has given to this work.

C. Brodiæi is among the most magnificent of the genus, often extending to a foot and a half or two feet in length, and pushing forth from a discoid base several main filaments as thick as small twine and of a blackish purple color. These are beset with scattered branches of uncertain length, which arise in a direction between horizontal and patent: along the branches at irregular intervals clusters of slender ramuli are disposed, from a quarter to half an inch long, multifid in a sub dichotomous manner, and acuminated at their apices. The whole of the branches and ramuli are of rich deep red-brown color when fresh, but turn black on drying, and are always strongly marked with dark longitudinal veins. The capsules are ovate, sessile, and plentifully scattered over the ultimate ramuli, sometimes on their sides, and sometimes at the axillæ of the divisions. Besides these C. Brodiæi, in common with most other of the marine species, presents what is usually considered as another kind of fructification, consisting of sphærical globules imbedded in the ultimate ramuli, but of their real nature I confess that I am unable to satisfy myself.

The whole of the plant is remarkably thick and bushy, and its mode of growth flexuose, by which, with its peculiar color, it may be readily known from its congeners. Neither the main stem or principal branches shew any appearance of dissepiments, but in the ramuli they are very striking, and divide them into joints whose length and diameter are nearly equal.

The drawing here represented was made by Miss Hutchins from a fresh plant, and by her communicated to my friend Mr. Turner.

In drying it adheres but very slightly to Paper and not at all to Glass.

A. C. Brodiæi, natural size.
B. Ditto magnified 4.
C. Ditto ditto 3.

Conferva pedicellata.

Miss Hutchins del.t

J. Stephens sculp.t

Published by I. W. Dillwyn

CONFERVA PEDICELLATA.

C. filamentis dichotomo-ramoſis, diffuſis, rubris; ramulis alternis, multifidis, apicibus furcatis; articulis ſurſum incraſſatis, diametro ſub-quintuplo longioribus.

C. pedicellata. Eng. Bot. t. 1817. (malè).

On the Beach at Selſey and Brighton; *Mr. Borrer.* Bantry Bay; *Miſs Hutchins.*

WE are indebted to Mr. Borrer for this elegant addition to the Britiſh Flora, he having firſt diſcovered it in Suſſex, and I am not aware of its having been found by any other botaniſt except Miſs Hutchins, to whom I am obliged, through Mr. Turner, for the preſent drawing, made by herſelf from recent ſpecimens which ſhe gathered on the ſhore at Bantry.

C. pedicellata grows about four inches in length, and is of a deep red inclining to roſe color. The filaments are repeatedly divided with rather diffuſe and dichotomous branches: the ramuli are alternate, and ſomewhat faſciculated with forked apices; in the ſpecimens from Miſs Hutchins they are obtuſe in every part of the plant, and ſo are the lower ones of thoſe from Mr. Borrer, but in theſe latter the uppermoſt are elongated and gradually attenuated towards their ſummits. The length of the joints is rather variable, but moſtly about five times greater than the diameter, and excepting thoſe which conſtitute the terminations of the ramuli, they are always thickeſt at the apices. The capſules are on ſhort fruit ſtalks, joined at the baſe, ovate, ſolitary, and moſt frequently placed in the upper forks of the ramuli.

In drying it adheres to both Glaſs and Paper.

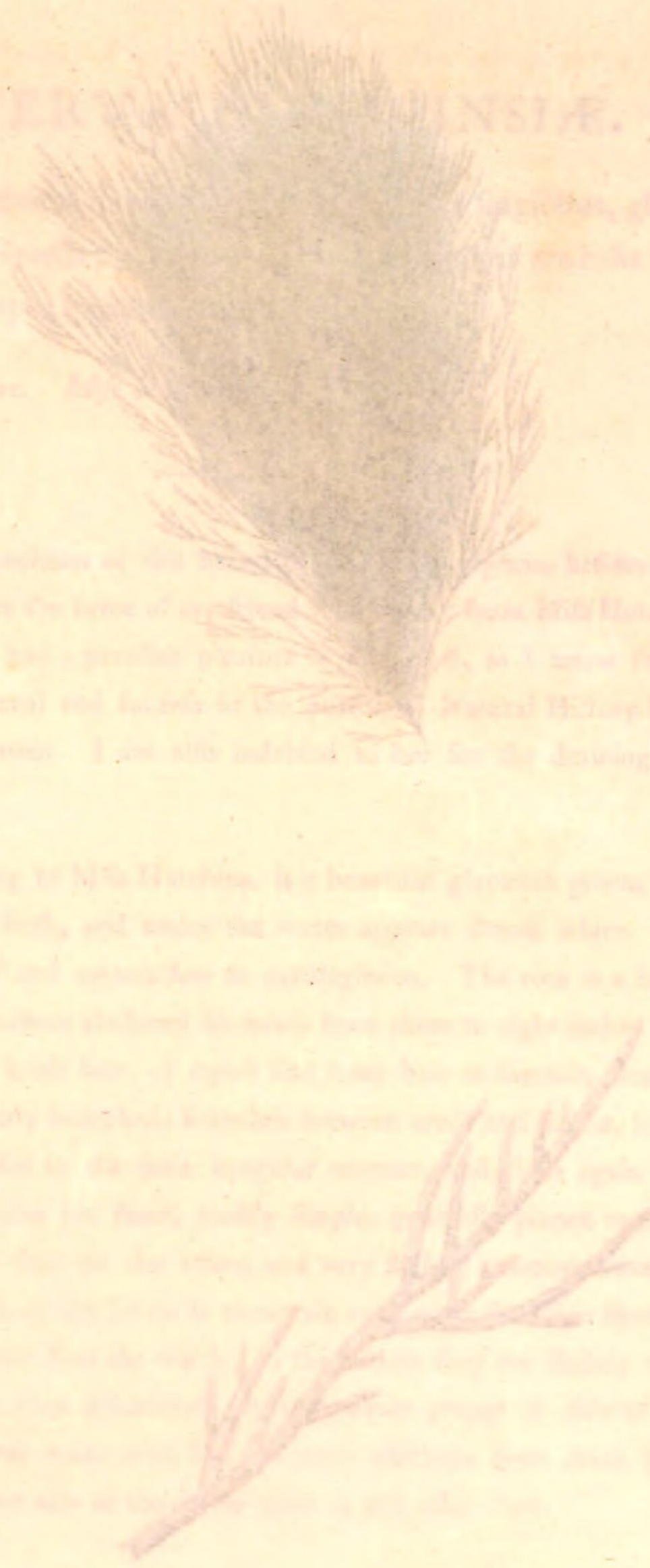
A. C. pedicellata, natural size.

B. Ditto, magnified 3.

C. Ditto, ditto 1.

FINIS.

W. Phillips, Printer,
George Yard, Lombard Street, London.



Conferva Hutchinsiæ.

Miss Hutchins del.t

J. Stopkins sculp.t

Published by L. W. Dillwyn

CONFERVA HUTCHINSIÆ.

C. filamentis ramoſiſſimis, flexuoſis, ſub cartilagineis, fragilibus, glauco-viridibus; ramis ſparſis; ramulis ſub ſecundis erectis, articulis torulofis, diametro duplo logioribus.

In Bantry Bay, not rare. *Miſs Hutchins.*

I HAVE ſeen no ſpecimen of this beautiful and ſtriking ſpecies beſides what I have received through the favor of my friend Mr. Turner from Miſs Hutchins, by whoſe name I have had a peculiar pleaſure in calling it, as I know few, if any Botaniſts, whoſe zeal and ſucceſs in the purſuit of Natural Hiſtory better deſerve ſuch a compliment. I am alſo indebted to her for the drawing here repreſented.

The color, according to Miſs Hutchins, is a beautiful glaucous green, with changeable tints when freſh, and under the water appears almoſt white. The ſubſtance is rather ſtiff and approaches to cartilaginous. The root is a largiſh diſk, giving riſe to numerous cluſtered filaments from three to eight inches long, ſomewhat thicker than horſe hair, of equal ſize from baſe to ſummit, flexuoſe, very much and irregularly branched; branches between erect and patent, looſely beſet with others diſpoſed in the ſame irregular manner, and theſe again with others; the ultimate ones are ſhort, moſtly ſimple, generally placed more on one ſide of the branch than on the other, and very ſlightly attenuated towards the apices. The length of the joints is uncertain even upon the ſame filament, but is about twice greater than the width; in the middle they are ſlightly torulofe. No fruit has yet been diſcovered. It is however proper to obſerve that this deſcription has been made with Mr. Turner's aſſiſtance from dried ſpecimens, as I have not been able to obtain the plant in any other ſtate.

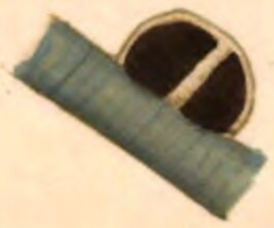
C. Hutchinſiæ approaches moſt nearly to C. diffuſa, from which it differs in the greater ſize of its filaments and in the much ſhorter joints, which are not as in that ſpecies regularly cylindrical but conſtantly ſwollen in the center. The ſame characters, and ſtill more its flexuoſe mode of growth, diſtinguiſh it at firſt ſight from C. rupeſtris.

In drying it adheres ſlightly to either Glaſs or Paper.

A. C. Hutchinſiæ, natural ſize.

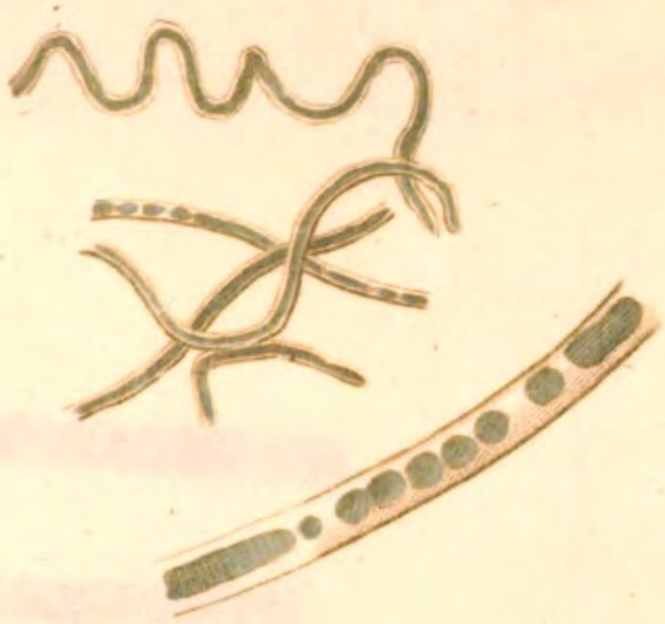
B. Ditto, magnified 3.

C decorticans



C confervicola

C scopulorum



C majuscula

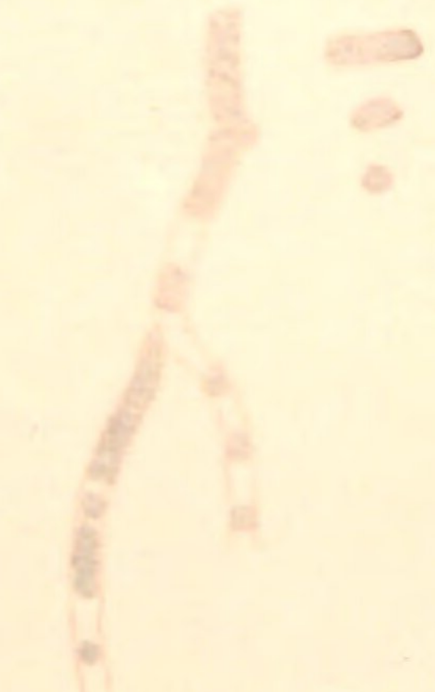
C distorta

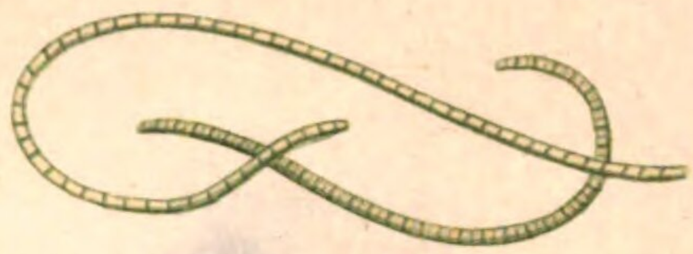
C. rivularis β.

T. F. Jenny del.t

J. Stephens sculp.t

Published by I. F. Dillon



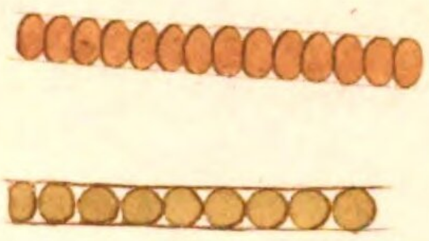


C. fugacifsima

C. alternata

C. fasciata

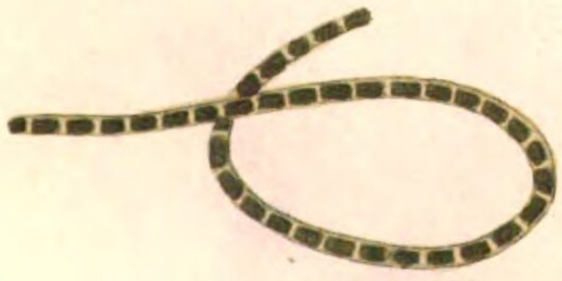
C. lineata



C. nummuloides

C. Melagonium

C. mucosa



C. inplexa

C. crispa

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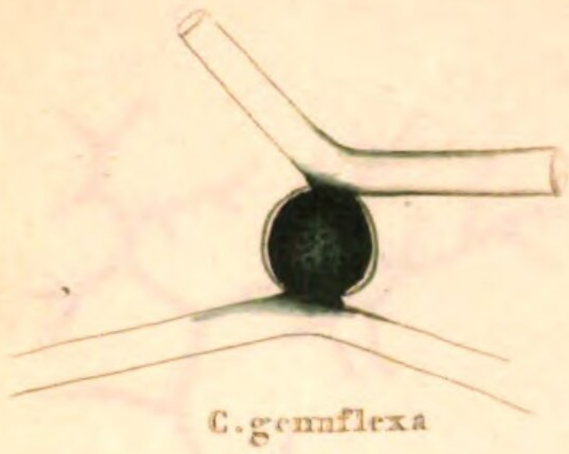
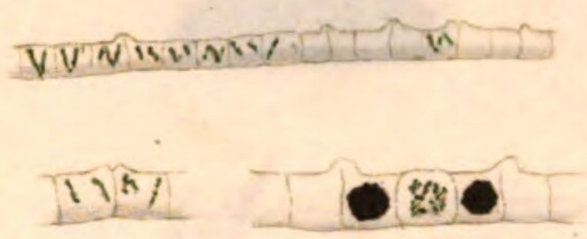
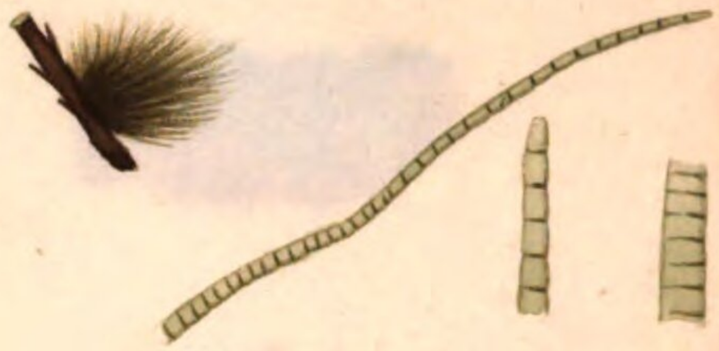
J. Stephens sculpt.



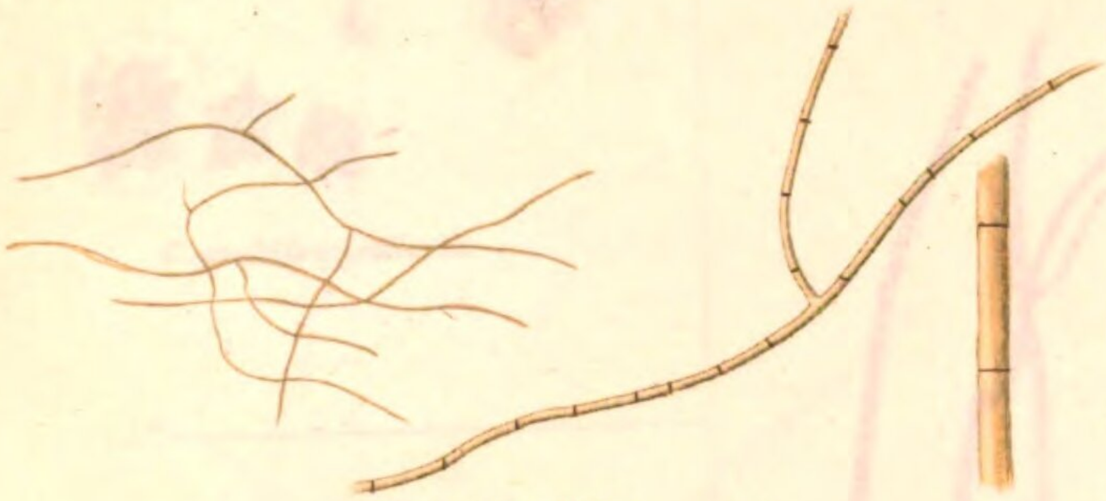
C. genuflexa



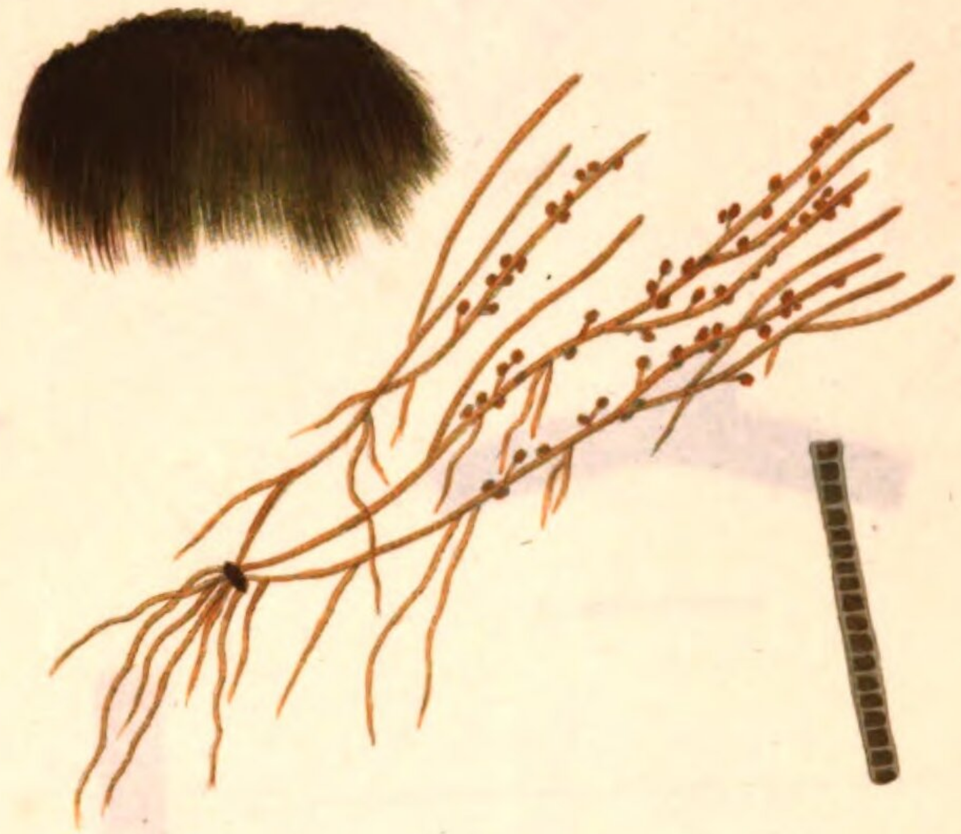
Var7 of C. Spiralis



C. flaccida



C. arachnoidea



C. radicans

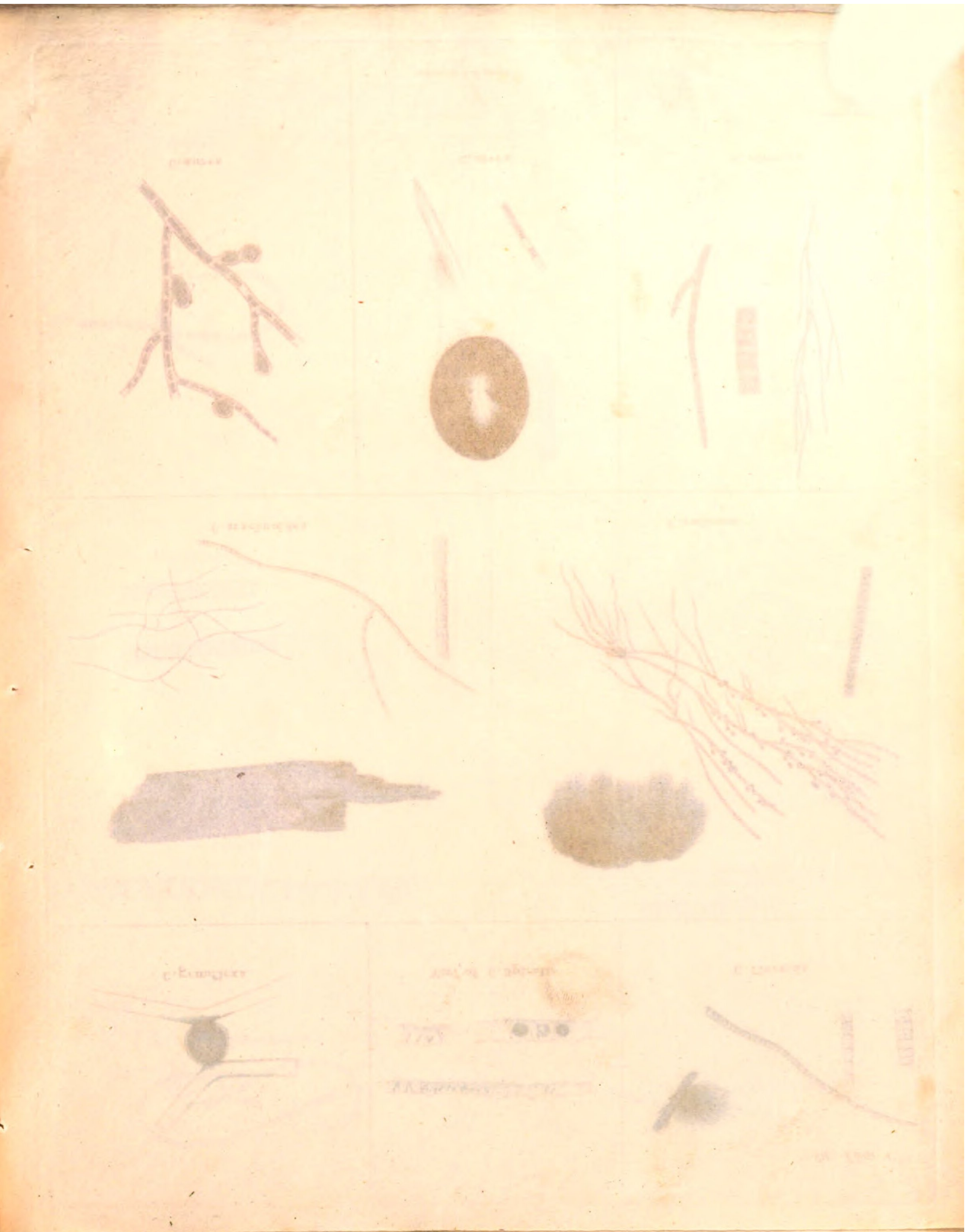
C. aurea

C. nivea

C. olivacea

J. Simpkins sculpt.

Published by I. W. Dillwyn



C. cryptarum

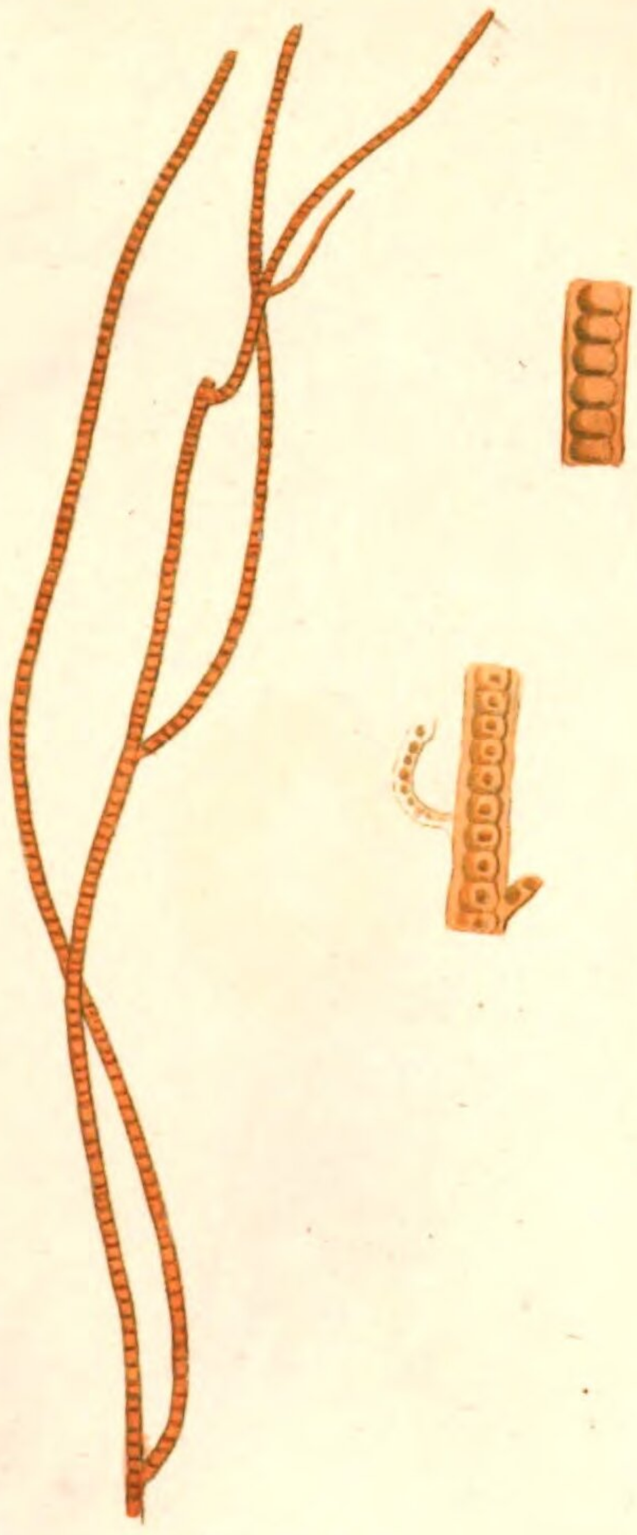
C. Brownii

C. pulveria

C. multicapsularis

C. atro-virens

C. exigua



C. ocellata

C. atra

J. Simpkins sculp.t

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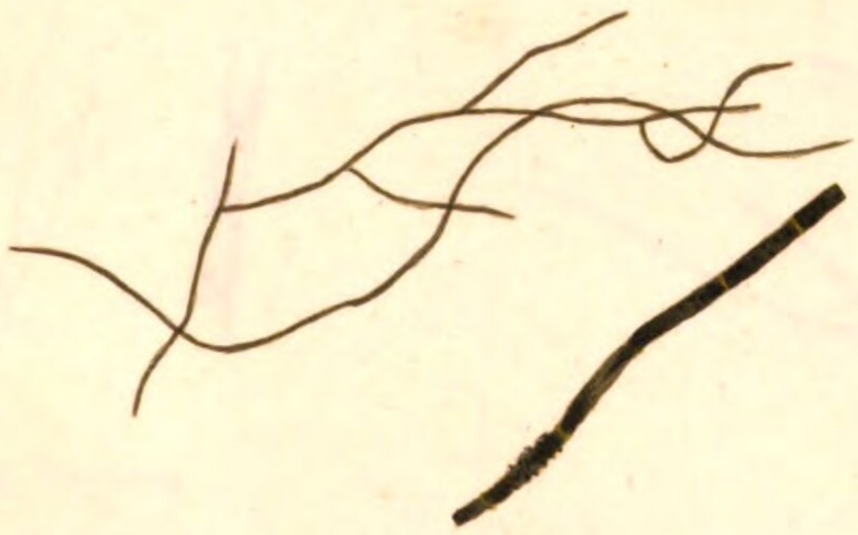
C. flavescens

C. aeruginosa

C. erecta

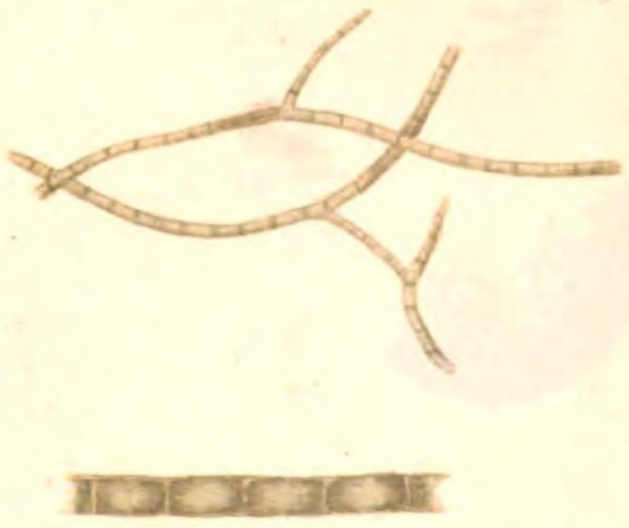


C. nigricans

C. tenosa

C. albida α

C. siliculosa



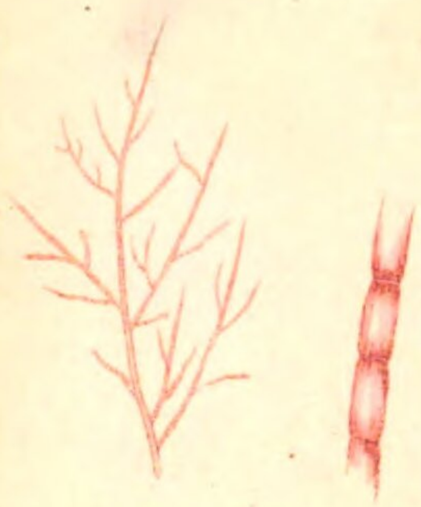
C. riparia

Published by L. W. Dillwyn

C. Paradoxa

C. tenella

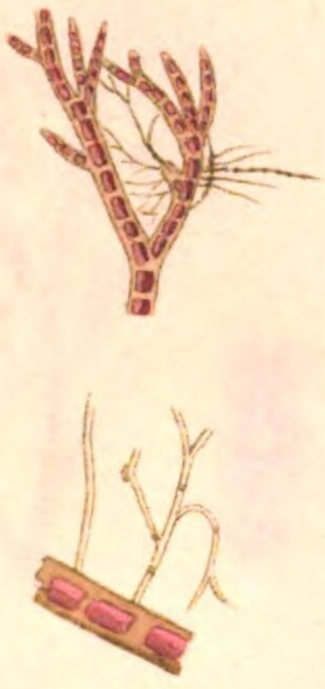
C. Plumosa



C. Davieseii

C. Floridula

C. rubra Var I



C. minutifsima

C. villosa

C. torulosa

Published by I. W. Dilleyn

J. Sowerby

C. denudata

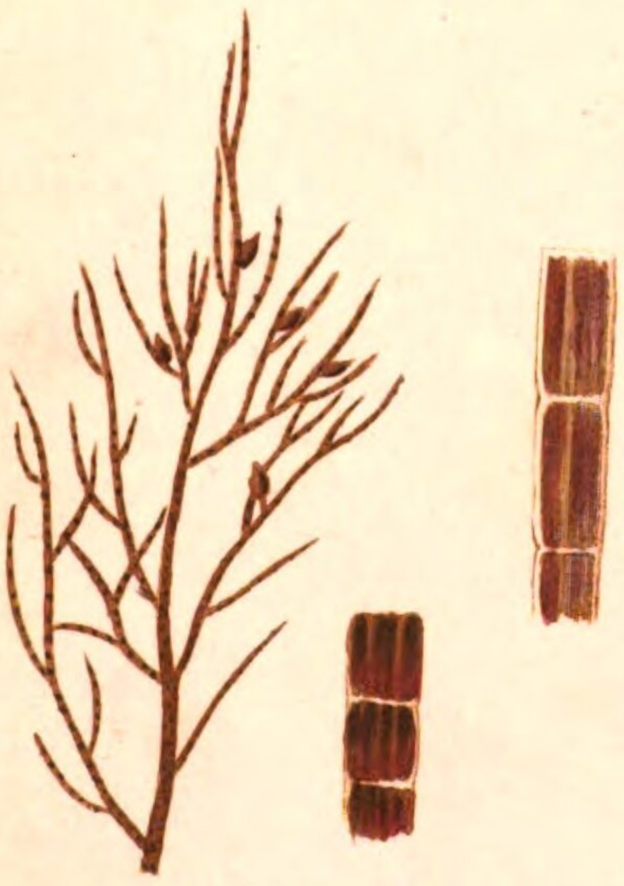
C. badia

C. fibrata

C. elongata

C. patens

C. coccinea



C. urceolata

C. arbuscula

C. fibrillosa

Published by I. W. Dillwyn

J. Stephens sculp.

Dillwyn, Lewis Weston,

British confervae

London 1809